The Coopers & Lybrand Consulting Group

Management Consultants

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PEAT MOSS MARKET STUDY

by

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NEW BRUNSWICK PEAT

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EXECUTIVE SUMMARY

The Coopers & Lybrand Consulting Group was engaged by the New Brunswick Department of Natural Resources and Energy to review the New Brunswick horticultural peat industry and identify market opportunities for its further development.

The objectives of the study were to:

- Determine how the peat moss market is presently structured in North America and identify market development opportunities for New Brunswick producers.

- Evaluate the potential for the further development of selected overseas markets for the New Brunswick peat moss industry.

The following paragraphs summarize the approach taken to achieve the study objectives and present the major findings and conclusions.

DATA COLLECTION APPROACH

The key data collection methods used during the study included a review of published information sources, a survey of peat producers, interviews with middlemen and industry associations in North America, Europe and Asia, and a survey of overseas markets.

The most important secondary data source was the United Nations data base of peat trade statistics. Other secondary sources included previously issued reports on the peat industry, industry statistics from both the United States Bureau of Mines and Statistics Canada, computer searches of relevant data bases, and a review of trade literature, magazines and studies.

Information on the New Brunswick peat industry was obtained from a survey of the twelve producers during early 1986.

Interviews with peat distributors and sales agencies were used to supplement the statistical data from secondary sources. In addition, government officials and association representatives were interviewed.

The overseas peat trade statistics from the United Nations data base were supplemented by a survey carried out through Coopers & Lybrand offices and Canadian Trade Consulates in selected overseas markets.

WORLD PEAT TRADE

After three years of relatively little expansion, world peat trade grew by 18% and 19% in 1984 and 1985, respectively, reaching a total of 61.5 million bales[1]. Intra-European trade accounts for the major portion of the increased world trade volume of peat. For example, from 1983 to 1985, the Netherlands doubled its peat exports to two European Common Market customers, West Germany and France, from 2.2 million bales to 4.6 million bales. During the same period, the Netherlands increased its peat imports by 52% from 9.9 million bales in 1983 to 15 million bales in 1985. West Germany provided over 90% of the increase, with Finland accounting for the remainder.

NOTE: [1] A "bale equivalent" refers to a 0.170m^3 (6 ft^3) bale, where raw peat, at approximately fifty percent moisture, is compressed two to one. For the remainder of this report, this measure is referred to as a "bale", and is converted to tonnes at a ratio of 29 bales to one tonne (metric) of peat.

PEAT IMPORTS

Europe, including the Scandinavian countries, accounted for 80% of total Western World imports or about 49 million bales. The major importing countries are the Netherlands, France and the United Kingdom, which collectively imported about 30 million bales in 1985.

Countries in North America are the next largest group of importers and represent 21% of Western World imports or about 12.7 million bales. The United States is the most important destination and accounts for over 98% of North American imports.

The remaining 3% of imports are primarily by countries in the Pacific Rim and the Middle East. Countries in each area imported about one million bales of peat during 1985. Japan accounts for about 80% of the imports by Pacific Rim countries. The other peat market of a reasonable size is Australia.

In the Middle East, Saudi Arabia is the largest market, with imports of about 587,000 bales, or approximately one-half of the total peat imports by countries in the Middle East. The other importing countries with imports of over 100,000 bales in 1985 are Morocco and Egypt; Jordan's imports of peat are small, less than 50,000 bales in 1985, but they are growing rapidly.

PEAT EXPORTS

Six countries account for over 95% of the Western World's exports of peat. These countries and their level of peat exports during 1985 are as follows:

- West Germany — 30.9 million bales
- Canada — 15.0 million bales
- the Netherlands — 8.2 million bales
- Ireland — 6.3 million bales
- Finland — 1.6 million bales
- Sweden — 1.1 million bales

The three major European producers, West Germany, the Netherlands and Ireland, primarily serve the markets in Europe and the Middle East. Smaller shipments have been made to the Pacific Rim, and to the South American and North American markets.

Canada has developed markets in the United States and Japan. It has also exported small shipments of peat to Europe, the Middle East and South America.

CANADA'S SHARE OF WORLD TRADE

Canada's exports of peat, in general, have been growing, but have not kept pace with the growth of the world peat trade. While world trade grew by 19% from 1984 to 1985, Canada's production and exports grew about 8% during the same period. Canada's share of world trade fell from 25.7% in 1984 to 20.8% in 1985, primarily as a result of the increase in intra-European trading.

Despite its declining share of the world market, Canada remains the second largest peat exporter and has maintained its leadership position in its two major export markets, the United States and Japan. Canadian producers account for over 99% of peat imports into the United States and for over 95% of Japan's imports. The United States is Canada's most important market, accounting for 96% of Canadian peat exports. The United States and Japan, together, receive over 99% of Canadian peat exports, which totaled about 15 million bales in 1985.

THE CANADIAN PEAT INDUSTRY

Within Canada, New Brunswick is a key peat moss producing province, with operations dating back to the early 1940s. In 1985, New Brunswick accounted for 34% of the 17 million bales of peat moss produced in Canada. Quebec is New Brunswick's largest domestic competitor, accounting for 37.5% of Canadian production in 1985.

Shipment values indicate that both New Brunswick and Quebec producers receive a lower proportion of production value when compared to production volume. For example, Quebec and New Brunswick accounted for 72% of the Canadian production volume in 1985, but received only 64% of the total value.

This is explained by the competitive nature of the markets which both provinces supply. New Brunswick and Quebec ship primarily to the Eastern United States, which are also the major United States peat producing areas. Thus, New Brunswick and Quebec producers face higher degrees of competition than the producers in Western Canada and, as a result, receive lower prices for their products.

THE UNITED STATES MARKET

Canadian provinces are typically net exporters of peat and, thus, they offer few market opportunities for New Brunswick producers. However, the United States market does offer an opportunity for industry growth and expansion. Although the United States market is relatively mature and experiencing slow growth, projected at 2% to 3% annually, its sheer size results in a substantial incremental demand for horticultural peat each year. With the United States' current annual level of demand at about 38 million bales, projected growth rates will result in additional demand for 750,000 to 1.3 million bales of peat per year. This represents an incremental demand which is approximately the same size as the current Japanese market becoming available each year.

Thus, if imports continue to account for 39% of the United States market, the historical norm, then Canadian producers will have access to another 290,000 bales to 507,000 bales of demand each year.

The United States' dependence on imports to meet demand is expected to increase as its peat industry comes under pressure to reduce production, due to concerns about damaging the environment. Thus, the market available to New Brunswick producers will grow at a rate faster than projected demand increases.

However, the extent that Canadian peat can fill the demand resulting from the closing of bogs in the United States is unknown. Canadian producers export sphagnum peat while American production is primarily reed-sedge, with small volumes of humus, hypnum and sphagnum. Because the main use of peat is as a general soil conditioner, the types of peat used are relatively interchangeable. However, each has specific characteristics which make it better than the others in certain applications.

Canadian sphagnum prices are two to three times higher than those for reed-sedge and humus. The extent to which the price sensitive buyers from each market segment will substitute the higher cost Canadian sphagnum for the lost supply of lower cost domestic peat is difficult to predict. Some buyers will reduce their use of peat, while others will substitute lower cost products such as bark and mulches.

The major peat markets in the United States are located along the Atlantic seaboard and in the North Central states. The New Brunswick industry is well positioned geographically in relation to these markets to attract its share of increased demand.

The New Brunswick peat industry is well established in the market and has a reputation for supplying a high-quality product. In addition, the industry has an established selling and distribution infrastructure in place to serve these markets.

On the negative side, Quebec producers share the same advantages as New Brunswick producers and are closer to key United States markets. However, Quebec peat is seen by importers and users as being of a lower quality compared to New Brunswick peat.

The availability of quality peat from easily accessible bogs will become more important as each province continues to develop its peat industry. Buyers typically are price sensitive and accessibility of the peat resource is a key element in the cost of the finished product.

MARKET SEGMENTS IN THE UNITED STATES

The United States peat market comprises the consumer/retail segment, professional grower segment and the soil mix producer segment.

1. The Consumer Market

The consumer sector, which consumes about 16 million bales annually, is the largest market segment in the United States and offers the potential to greatly increase peat sales. Peat has a low market penetration, estimated at 14% in a recent National Gardening survey. Sixty-nine million households are engaged in some form of gardening in the United States, but only 16 million households reported purchasing peat during 1986, according to the survey.

Peat has a wide variety of applications for gardening, and distributors interviewed say that the average consumer is not aware of the benefits associated with using peat moss. Thus, an increase in market penetration should be achievable. In addition, peat moss is one of the best soil amendments available on the market. It competes against bark and mulches, but has several advantages over these products.

The potential to increase peat sales becomes obvious when one considers the following rationale. For each one percent increase in the number of households purchasing soil amendments, incremental demand for peat will be 1.2 million bales.

In summary, the consumer market in the United States is under-developed and represents an opportunity for New Brunswick producers. This would, of course, require a substantial promotional effort on behalf of the peat industry.

2. **The Professional Growers Market**

The professional growers market accounts for about 40% of the United States market, or 15 million bales. It does not appear to offer as much market development potential for the New Brunswick peat producers are does the consumer market. Professional growers are well aware of peat and its benefits, and most are currently using the product in all the applications for which they feel peat is appropriate. Thus, increased penetration of this market segment will be difficult.

In addition, professional growers are very cost conscious. They will reduce their consumption of peat, and switch to other growing media which offer similar benefits, if peat becomes too expensive.

Finally, professional growers in the United States report that offshore producers are pressuring their margins and taking sales from them. Therefore, growth in demand for their products is declining and their peat purchases will also decline.

3. The Soil Mix Market

The soil mix market accounts for 20% of the United States market, or about 7.5 million bales. This market, growing at an estimated 10% to 20% annually, is comprised both of firms which produce peat moss and have diversified into soil mixes, and firms which do not produce peat moss and thus purchase their peat requirements. Several New Brunswick producers operate mixing plants in both Canada and the United States.

This market appears to offer opportunities for existing suppliers to expand, but new entrants will face a number of entry barriers which will reduce their chances for success. For example, existing suppliers report that they have sufficient plant capacity to meet incremental demand for the next three to five years. In addition, producers pay high premiums for liability insurance.

Soil mix companies require technical sales representatives who can analyze a customer's needs and recommend the proper mix. These representatives are becoming more difficult to find and, therefore, command high salaries.

Finally, a soil mixing plant requires a significant investment and ideally should be located close to its market. Most major markets are currently well served.

Thus, while this particular market segment is a high growth one, it will benefit primarily the producers who are already established. There does not appear to be a good opportunity for smaller New Brunswick producers, who are not already operating in this market, to enter it successfully.

OVERSEAS MARKETS

Analysis of United Nations peat trade statistics for the Western World, and a subsequent survey covering selected markets, indicates that two countries, Japan and Saudi Arabia, warrant further investigation by New Brunswick producers as market development opportunities. Western European countries do not appear to offer an opportunity at this time but also warrant investigation.

The first area of opportunity is Japan. Japan is a market which New Brunswick producers have already penetrated and have developed trade contacts within. Peat is well established for horticultural uses in Japan, with over 900,000 bales imported, primarily from Canada, during 1985. In addition, New Brunswick producers do not face major barriers which will limit their further penetration of this market.

Saudi Arabia also merits further investigation. Peat is well established in the country, with imports totalling over 500,000 bales in 1985. Annual incremental imports have averaged over 86,000 bales for the period 1981 to 1985. Up until 1984, Saudi Arabia represented a 25,000 bale market for Canadian peat moss. Since then, West Germany and Finland have taken it over. However, this market is large and growing, and New Brunswick producers may have an opportunity to re-establish Canadian exports to Saudi Arabia.

Israel, Jordan and Morocco offer limited potential for New Brunswick producers, and would warrant research only after Saudi Arabia has been investigated. Although these countries had high annual growth rates for peat imports from 1981 to 1985, ranging from 83% in Jordan to 25% in Morocco, the individual country markets are relatively small. In total, the 1985 addition to 1984 imports of peat by these three countries was only about 9,500 bales.

Western European countries are among the largest importers of peat and are currently well served by Western European peat producers. Canada has lost the small share of this market it held in the early 1980s as the European peat industry, primarily in West Germany, increased its production.

It appears that a non-competitive price was the major factor which contributed to Canada losing its position in the European market. Despite more favourable exchange rates, the high transatlantic shipping costs, about double the cost of the peat, have driven the cost of Canadian peat to approximately double the cost of European peat.

However, European peat producers are coming under increasing pressure to reduce the rate of industry expansion, and thus Europe may offer a longer term opportunity for Canadian producers. In addition, the European producers are key suppliers to the Middle Eastern countries, and therefore the opportunities in the Middle East will be somewhat dependent on the trends in Europe. Thus to fully understand the longer term potential of the European markets, and to a lesser extent the Middle Eastern markets, an in-depth analysis of Western Europe's production and trading patterns needs to be undertaken.

THE NEW BRUNSWICK PEAT INDUSTRY

The New Brunswick peat industry is well positioned to pursue selected opportunities for growth. The province is well situated in relation to the major U.S. peat consuming region on the Atlantic seaboard. Although distributors report that Quebec peat enjoys a freight cost advantage over New Brunswick peat, the cost differential is not large enough to significantly reduce New Brunswick's sales.

In addition, distributors view New Brunswick peat as a higher quality product than Quebec peat. Two distributors reported that they did not

approach commercial growers until they had New Brunswick peat to sell. They do not believe that Quebec peat is of the same high quality.

Also, New Brunswick has a major shipping port, Saint John, and should be able to serve the overseas countries which offer potential. The key constraint to penetrating these markets is meeting the price competition from current suppliers who may be located closer to the market. Since New Brunswick producers appear to run efficient operations which produce peat at a very competitive price, transportation costs become the key issue.

However, the availability of peat within the province may limit the industry's ability to serve large new markets. An analysis of its current production capabilities indicates that the industry is operating at 85% to 90% of its capacity based on 30 days of production annually.

CONCLUSIONS

In conclusion, although New Brunswick peat producers are well positioned to pursue the growth and development of their industry, current productive capacity may be a limiting factor in attempting to capture large new markets. Based on our analysis, the following priorities for continued industry growth are recommended:

1. Continue to focus attention on the United States market. This country's dependence on imported peat supplies is increasing, and each year's market growth will add 750,000 to 1.3 million bales of incremental demand.

2. Develop the consumer market segment in North America by increasing an awareness of the benefits received from the use of peat through greater promotional activity.

3. Continue to meet the increasing demand for soil mixes. This opportunity is available primarily to existing producers of these products. The technical product support requirements and related product liability issues limit the appeal of this market segment to new suppliers.

4. Continue to aggressively pursue the Japanese market to ensure that New Brunswick producers obtain a large share of its expected growth. A cohesive program to attract and retain importers and reach the major Japanese co-operatives needs to be developed.

5. Conduct an in-depth analysis of Western European production to fully understand its longer-term market potential. The analysis needs to examine the production, imports and exports of key peat traders in Europe, including West Germany, the Netherlands and Ireland. In addition, the quantity of reserves and environmental pressures on the industry need to be evaluated.

   This analysis will also indicate the ability of the European producers to serve their Middle Eastern markets, particularly Saudi Arabia, and thus help to identify the longer-term potential of these markets for New Brunswick producers.

I. INTRODUCTION

The Coopers & Lybrand Consulting Group is pleased to submit this report, "Peat Moss Market Study", to the New Brunswick Department of Natural Resources and Energy.

Our key consultants for this study have been Mr. John Chapman, consultant, and Ms. Jane Spooner, manager. Mr. William Band, partner, provided input for the market analysis and Mr. Peter LeBlanc, partner, had overall responsibility for the study.

A Steering Committee, comprising representatives from both the new Brunswick and Federal Governments, provided supervision to the consulting team. Mr. Jacques Thibault from the department of Natural Resources and Energy and Mr. Don Gemmell from the Department of Commerce and Technology have provided liaison between the Committee and the consultants.

The two primary objectives for the study were:

- To determine how the peat moss market is presently structured in North America and to identify market development opportunities for New Brunswick producers.

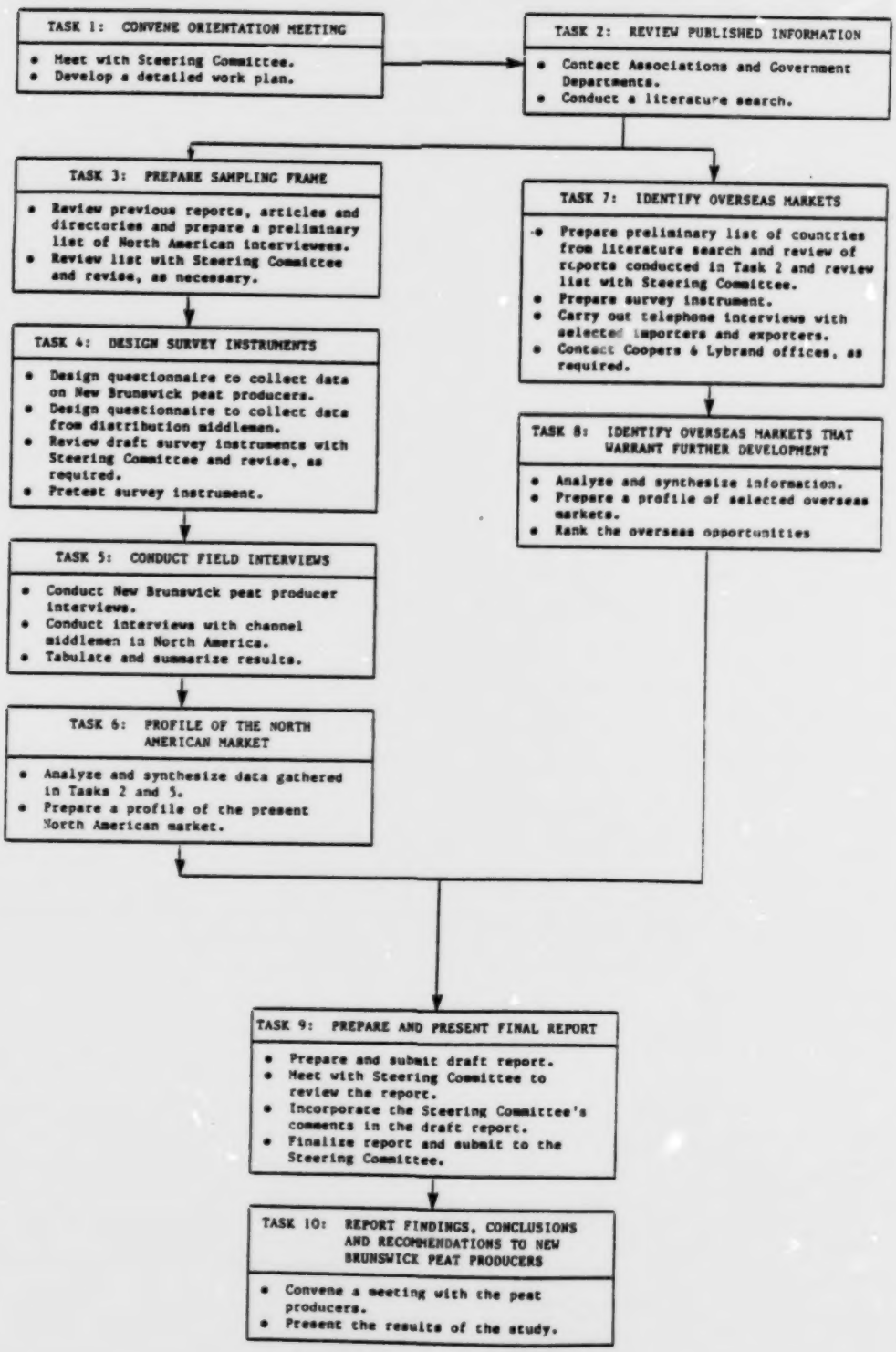
- To evaluate the potential for the further development of selected overseas markets for the New Brunswick peat moss industry.

Appendix I contains a copy of the Terms of Reference. It should be noted that the scope of work carried out addressed only the horticultural peat industry. The fuel peat sector was not within the study's terms of reference.

The following chapter describes the research activities undertaken to achieve the study objectives. Subsequent chapters provide our findings, analyses and conclusions.

EXHIBIT I

OVERVIEW OF OUR APPROACH


TASK 1: CONVENE ORIENTATION MEETING
• Meet with Steering Committee.
• Develop a detailed work plan.
TASK 2: REVIEW PUBLISHED INFORMATION
• Contact Associations and Government Departments.
• Conduct a literature search.
TASK 3: PREPARE SAMPLING FRAME
• Review previous reports, articles and directories and prepare a preliminary list of North American interviewees.
• Review list with Steering Committee and revise, as necessary.
TASK 4: DESIGN SURVEY INSTRUMENTS
• Design questionnaire to collect data on New Brunswick peat producers.
• Design questionnaire to collect data from distribution middlemen.
• Review draft survey instruments with Steering Committee and revise, as required.
• Pretest survey instrument.
TASK 5: CONDUCT FIELD INTERVIEWS
• Conduct New Brunswick peat producer interviews.
• Conduct interviews with channel middlemen in North America.
• Tabulate and summarize results.
TASK 6: PROFILE OF THE NORTH AMERICAN MARKET
• Analyze and synthesize data gathered in Tasks 2 and 5.
• Prepare a profile of the present North American market.
TASK 7: IDENTIFY OVERSEAS MARKETS
• Prepare preliminary list of countries from literature search and review of reports conducted in Task 2 and review list with Steering Committee.
• Prepare survey instrument.
• Carry out telephone interviews with selected importers and exporters.
• Contact Coopers & Lybrand offices, as required.
TASK 8: IDENTIFY OVERSEAS MARKETS THAT WARRANT FURTHER DEVELOPMENT
• Analyze and synthesize information.
• Prepare a profile of selected overseas markets.
• Rank the overseas opportunities
TASK 9: PREPARE AND PRESENT FINAL REPORT
• Prepare and submit draft report.
• Meet with Steering Committee to review the report.
• Incorporate the Steering Committee's comments in the draft report.
• Finalize report and submit to the Steering Committee.
TASK 10: REPORT FINDINGS, CONCLUSIONS AND RECOMMENDATIONS TO NEW BRUNSWICK PEAT PRODUCERS
• Convene a meeting with the peat producers.
• Present the results of the study.

II. METHODOLOGY

Our approach to the study, as illustrated in Exhibit 1, opposite, consisted of five phases, comprising ten tasks. The phases were:

- Phase I: Initiate Project and Collect Secondary Data.
- Phase II: Collect Primary Data on North American Market.
- Phase III: Collect Data on Selected Overseas Markets.
- Phase IV: Profile Markets and Identify Opportunities.
- Phase V: Report Findings, Conclusions and Recommendations.

Information was collected from several sources by a variety of methods. The major activities are described in the following paragraphs.

A. REVIEW OF SECONDARY INFORMATION SOURCES

We reviewed information from a variety of secondary sources, including the following:

- previously issued reports on the peat industry,
- computer searches of relevant data bases,
- reviews of trade literature and magazines,
- Statistics Canada data,
- United States Bureau of Mines publications, and
- the United Nations data base of peat trade statistics.

Appendix II contains a bibliography of the secondary information sources which we reviewed during the course of the study.

B. INTERVIEWS

We conducted over 70 in-person and telephone interviews with the following types of market participants and observers:

- Canadian brokers,
- United States brokers,

EXHIBIT 2

BREAKDOWN OF RESPONDENTS BY TYPE

RESPONDENT CATEGORIES	NUMBER OF INTERVIEWEES
Canadian Middlemen	3
U.S. Middlemen/Users	37
Japanese Importers	3
French Importers	3
Producing U.S. States and Producers	9
Trade Associations/Magazine Editors	11
Government Contacts	5

- United States distributors,
- representatives of peat-producing U.S. states,
- trade association executives,
- Japanese importers,
- French importers,
- nurseries,
- growers, and
- magazine editors.

Many of the respondents acted as both middlemen and users. For example, nurseries and growers interviewed used peat in their operations, but also sold it to consumers and small commercial accounts.

Exhibit 2, opposite, provides a breakdown of the interviews conducted, by type of respondent. Appendix III lists the respondents and Appendix IV contains a copy of the interview guide.

C. SURVEY OF THE CURRENT NEW BRUNSWICK PEAT PRODUCERS

We surveyed the twelve current peat producers in New Brunswick to profile the production capabilities of the industry. Each producer was contacted by letter to request his/her support and cooperation in completing the questionnaire. Exhibit 3, overleaf, lists the producers interviewed.

During the month of January, 1987, each producer was contacted by telephone and a convenient time set for a representative of The Coopers & Lybrand Consulting Group to conduct an in-person interview with him/her.

Eleven of the interviews were conducted in person, while one respondent, whose records were in Vancouver, was interviewed over the telephone. The producers were generally very supportive of the survey and took the necessary time to complete the interview. We

EXHIBIT 3

NEW BRUNSWICK PRODUCERS SURVEYED

ASB Greenworld Ltd.
Pointe-Sapin

Acadian Peat Moss (1979) Ltd.
Lamèque

Atkins and Durbrow (N.B.) Ltd.
Bas-Caraquet

Fafard Peat Moss Co., Ltd.
Shippagan

Fisons Western Corporation
Maisonette

Grand Anse Peat Moss Ltd.
Grand Anse

Heveco Ltd.
Tabusintac

Kent Peat Moss Ltd.
Saint-Paul

Lamèque Peat Moss Ltd./
St-Raphael Peat Moss Ltd./
Canadian Supreme Products Ltd.
Lamèque

Malpec Peat Moss Ltd.
Rexton

Pigeon Hill Peat Moss Ltd.
Lamèque

Thériault and Hachey Peat Moss Ltd.
Baie-Sainte-Anne

thank them for their support. Appendix V contains a copy of the questionnaire used for conducting the producer interviews.

D. FOREIGN COUNTRIES

Our analysis of international peat markets began with a thorough review of the United Nations data base on world peat trading. For large importing countries, we telexed both Coopers & Lybrand offices and the Chief Commercial Officers at the various Canadian trade consulates in these overseas countries. For Japan, which is New Brunswick's second largest market, we completed three in-person interviews with peat importers. For France, which is the largest net importing country in Western Europe, we conducted three telephone interviews. We asked a number of questions pertaining to the local peat market in each country which formed the basis of the overseas market profiles presented in Chapter VI.

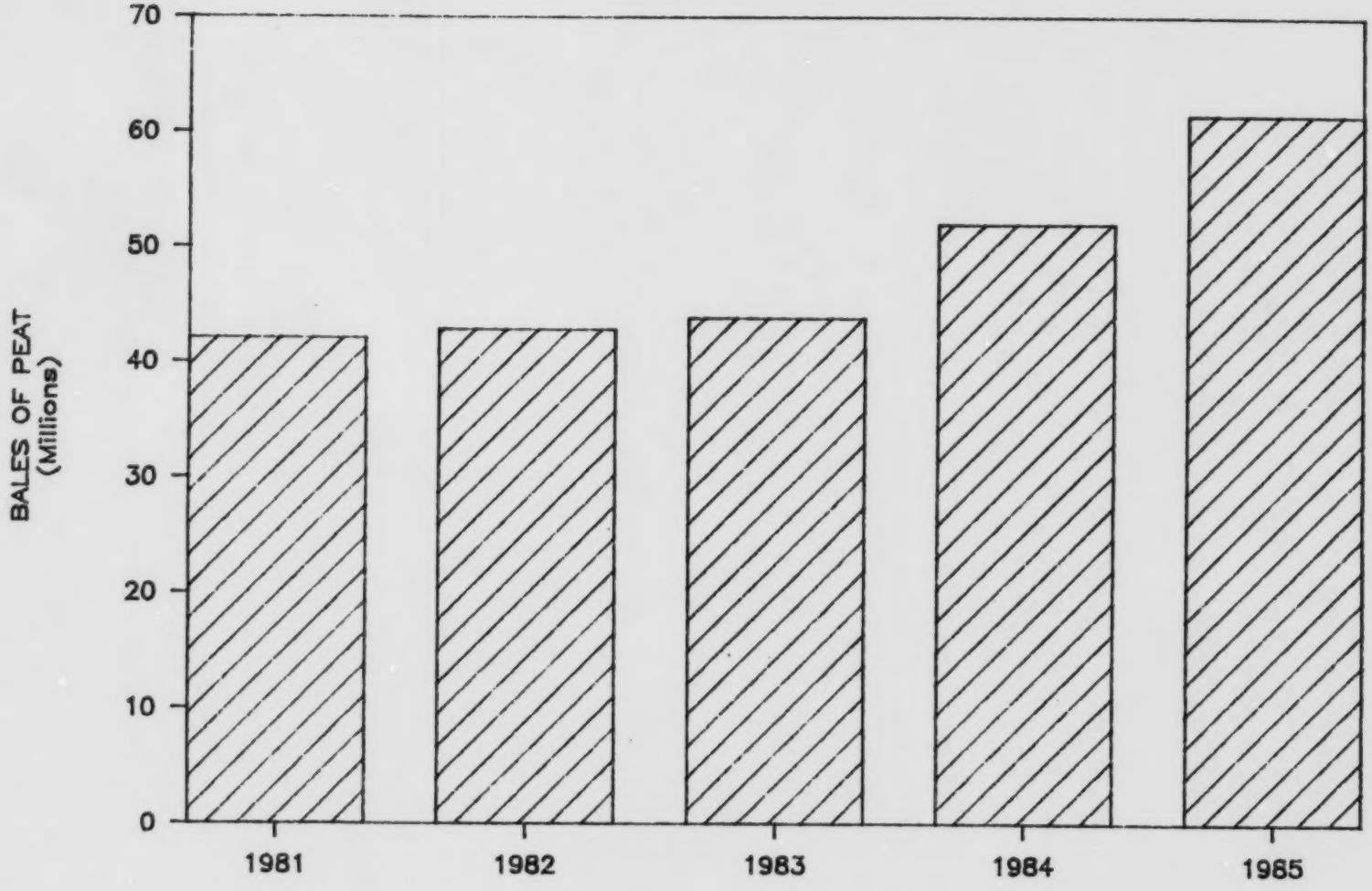
The Commercial Officers and Coopers & Lybrand gathered the information from a combination of published statistics and interviews with local industry participants. The Canadian consulates were most helpful and responsive, and they also made it clear that they would be willing to assist in any further market investigation. Appendix VI contains a copy of the telex, and a list of the consulates and Coopers & Lybrand offices to which it was sent.

E. WORK PROGRAM

During the course of the study, regular review meetings were held with the project Steering Committee. During these meetings, progress to date was reviewed and appropriate adjustments to the study methodology were discussed.

EXHIBIT 4

WORLD TRADE VOLUMES OF PEAT



SOURCE: United Nations Trade Statistics, 1985

In summary, the findings and conclusions discussed in the subsequent chapters are based on a comprehensive and systematic work program of data collection.

III. OVERVIEW OF WORLD MARKETS

This chapter provides an overview of the world horticultural peat market and analyzes the major trading patterns of peat, by major exporting country. Then, Canada's position in the world peat market is analyzed in terms of major customers and trade volumes.

A. THE WESTERN WORLD HORTICULTURAL PEAT MARKET

Total western world trade in peat moss increased by 52% between 1981 and 1985, from a level of 42 million bale equivalents[1] to 64 million bales. As shown in Exhibit 4, opposite, the majority of the increase since 1981 has taken place between 1983 and 1985 when the annual increase in world trade volumes of peat moss averaged about 20%.

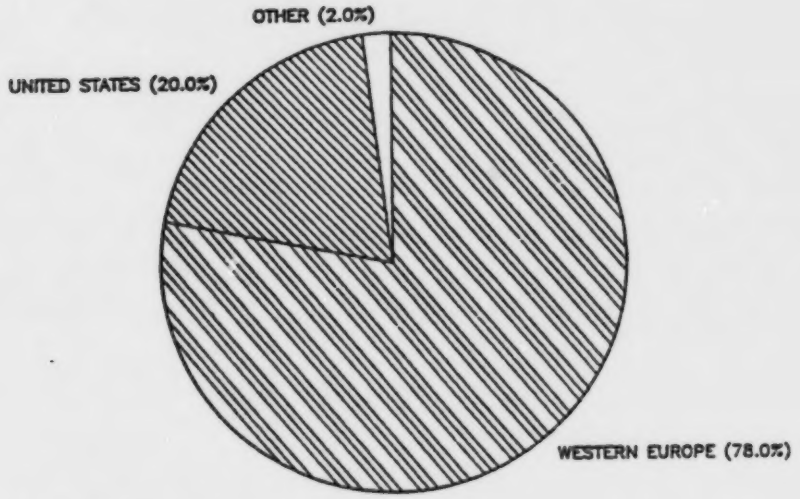
The bulk of the increases in world trade occurred in Europe where the trade between European countries increased dramatically. For example:

- West Germany's exports to three of its largest customers, France, Italy and the Netherlands, increased by about 7 million bales, from 14.5 million bales in 1983 to 21.4 million bales in 1985. This represents an increase of 47%. During the same period, West Germany's imports of peat rose from 1.3 million bales to 2.0 million bales. The Netherlands, a major customer, accounted for 95% of the increase in West German peat imports.

NOTE: [1] A "bale equivalent" refers to a 0.170m^3 (6ft^3) bale, where raw peat, at approximately fifty per cent moisture, is compressed two to one. For the remainder of this report, we refer to this measure as a "bale", and convert to tonnes at a ratio of 29 bales to one tonne (metric) of peat.

EXHIBIT 5

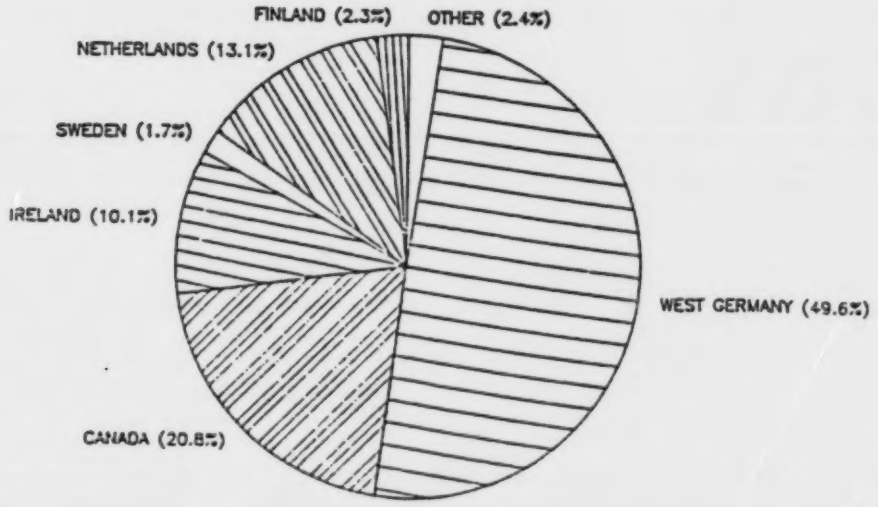
WORLD IMPORTS OF PEAT BY MAJOR MARKET



SOURCE: United Nations Trade Statistics, 1985

EXHIBIT 6

WORLD EXPORTS OF PEAT BY MAJOR SUPPLIER



SOURCE: United Nations Trade Statistics, 1985

- From 1983 to 1985, the Netherlands doubled its peat exports to two European Common Market customers, West Germany and France, from 2.2 million bales to 4.6 million bales. During the same period, the Netherlands increased its peat imports by 52% from 9.9 million bales in 1983 to 15 million bales in 1985. West Germany provided over 90% of the increase, with Finland accounting for the remainder.

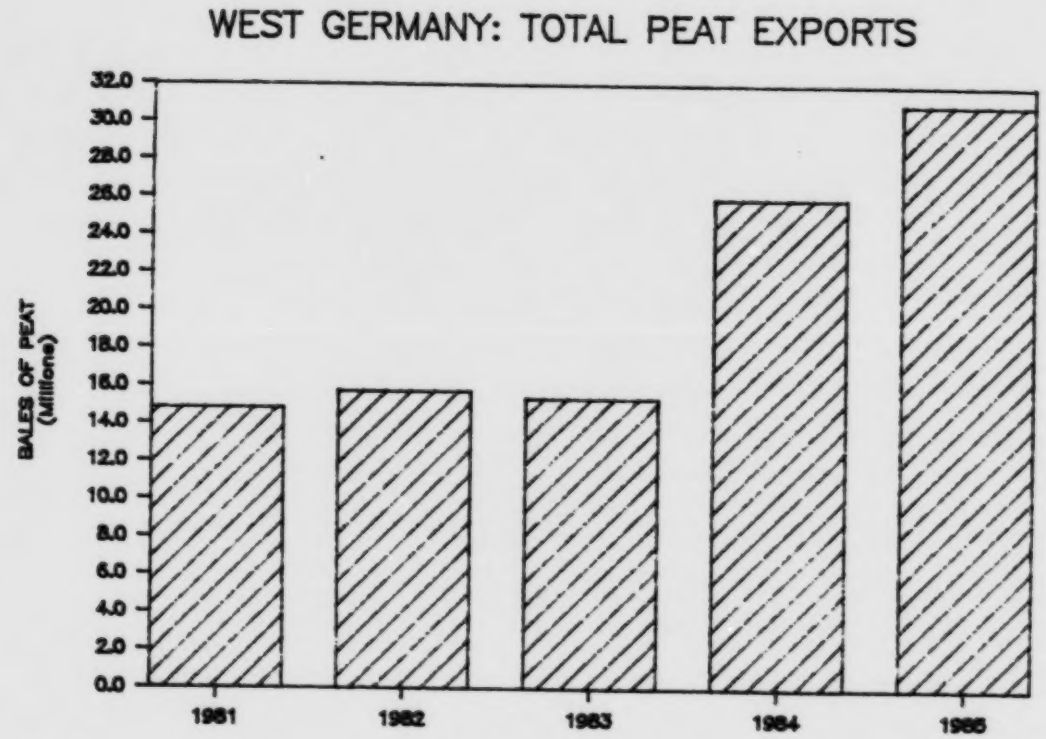
- Several other Western European countries, including France, Italy, Belgium and the United Kingdom, all increased their imports of peat from 10% to 60% between 1983 and 1985. Western European producers accounted for over 95% of these increases.

Thus, intra-European trade accounts for a major portion of the increased world trade volumes of peat which occurred between 1983 and 1985.

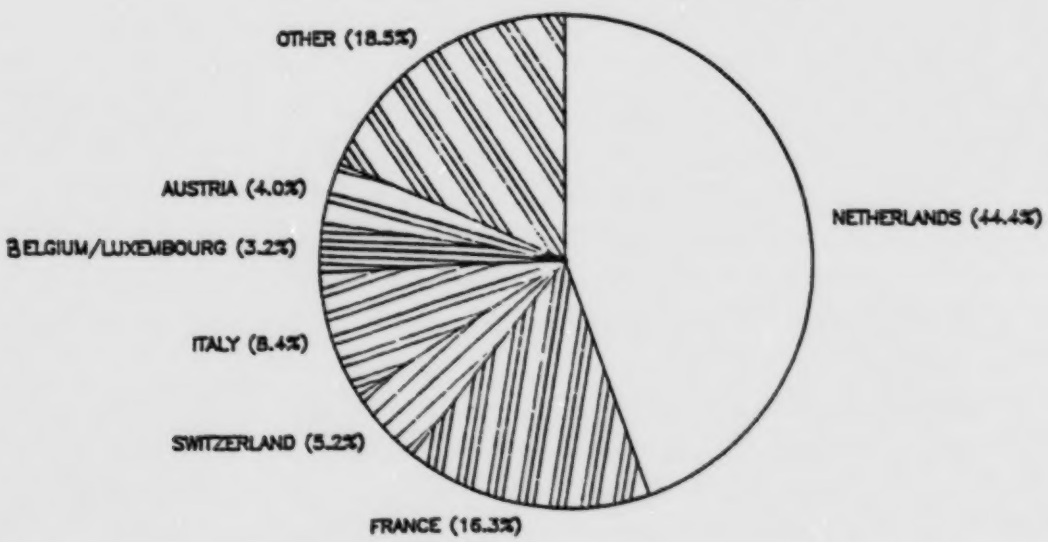
In addition to Western Europe, which accounted for 78% of world imports of peat in 1985, the major market for peat moss is the United States which accounted for 20% of world imports. The remaining 2% of available imports were spread over a number of countries, of which Japan was the most significant. Exhibit 5, opposite, illustrates the distribution of peat imports among major markets. Subsequent chapters discuss end markets in detail. Chapter IV discusses the North American market, and a detailed analysis of U.S. peat markets is presented in Chapter V. Chapter VI profiles Western European peat markets and other selected overseas opportunities for New Brunswick producers.

From an exporting point of view, the four largest exporters of peat moss in the world (West Germany, Canada, the Netherlands and Ireland) accounted for nearly 94% of all exports (as illustrated in Exhibit 6, opposite). The next four most significant exporters account for a further 4% to 5%. Thus, eight western countries (West

EXHIBIT 7



Peat Exports By Major Market (1985)



SOURCE: United Nations Trade Statistics

Germany, Canada, Ireland, the Netherlands, Finland, Austria, Belgium and Sweden) account for nearly 99% of Western world peat exports; the remaining 1% to 2% is accounted for by Eastern Bloc countries (U.S.S.R., Poland and Hungary).

The major peat exporting countries are profiled in the following paragraphs. This is followed by a more detailed discussion of Canada's peat industry.

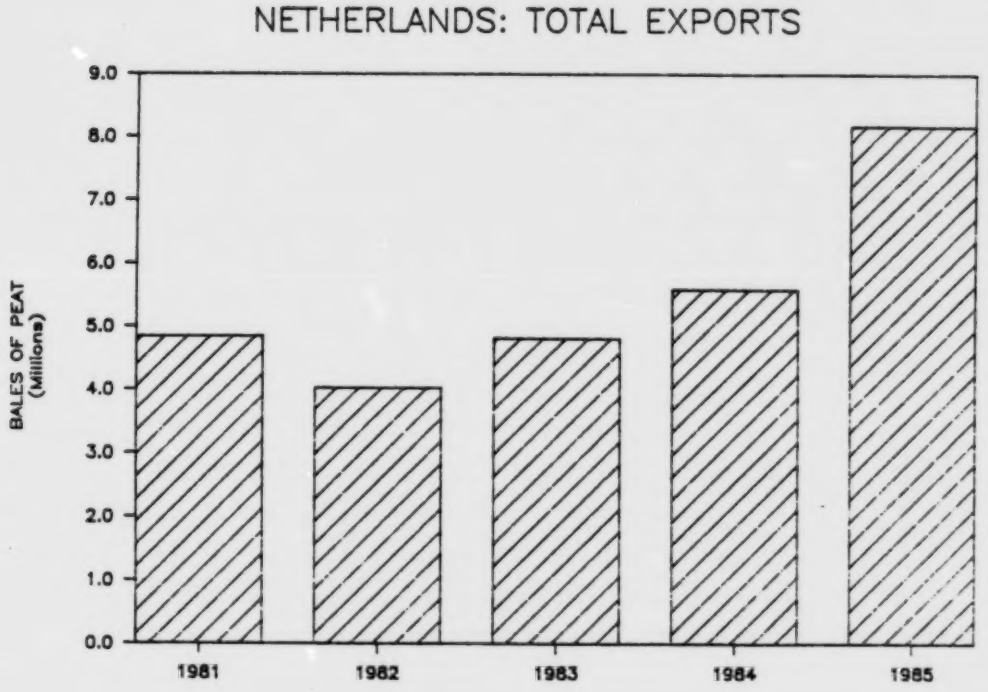
1. West Germany

West Germany is the largest exporter of peat in the world, accounting for nearly half of all exports. It has experienced strong growth in peat exports, as volumes have doubled from about 15 million bales to 31 million bales between 1981 and 1985. The greater part of that growth took place in 1984 and 1985, when exports to other European countries increased by approximately 20%. The Netherlands is West Germany's largest market for this commodity, importing 44% of West Germany's exports. France is the next largest importer of West German peat, accounting for 16% of the latter's exports, as shown in Exhibit 7, opposite.

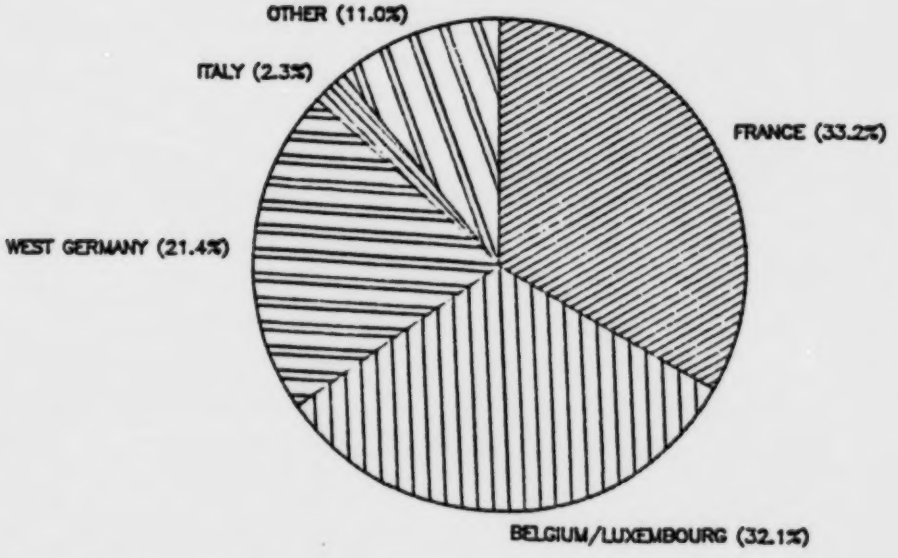
Nearly 90% of German peat produced is located in the northern province of Niedersachen, Lower Saxony. The peatlands have been used intensively for agricultural purposes and for horticultural peat production. This has led to a great deal of negative reaction by conservation groups, as the few remaining intact peatlands are the last undisturbed natural areas, and are considered an example of a rare eco-system in that country.

The Peat Industry Association in West Germany represents about 160 medium and small-scale peat producers. Its main

EXHIBIT 8



Peat Exports By Major Market (1985)



SOURCE: United Nations Trade Statistics

function in the past has been to act as a liaison between its members and the government, as well as to provide information on new technology and innovative harvesting techniques. More recently, the Association has been concerned with ensuring the continued viability of the industry, in view of the government's strong conservation policies.

There is also a Peat Distribution Agency in West Germany which serves as a central distribution function and marketing service for about 25 producers in Lower Saxony. The Association has a number of standard products which various producers mix and pack under a brand name. The Association will also buy peat moss from any given member, and then distribute it to the end-user, in most cases, a greenhouse grower.

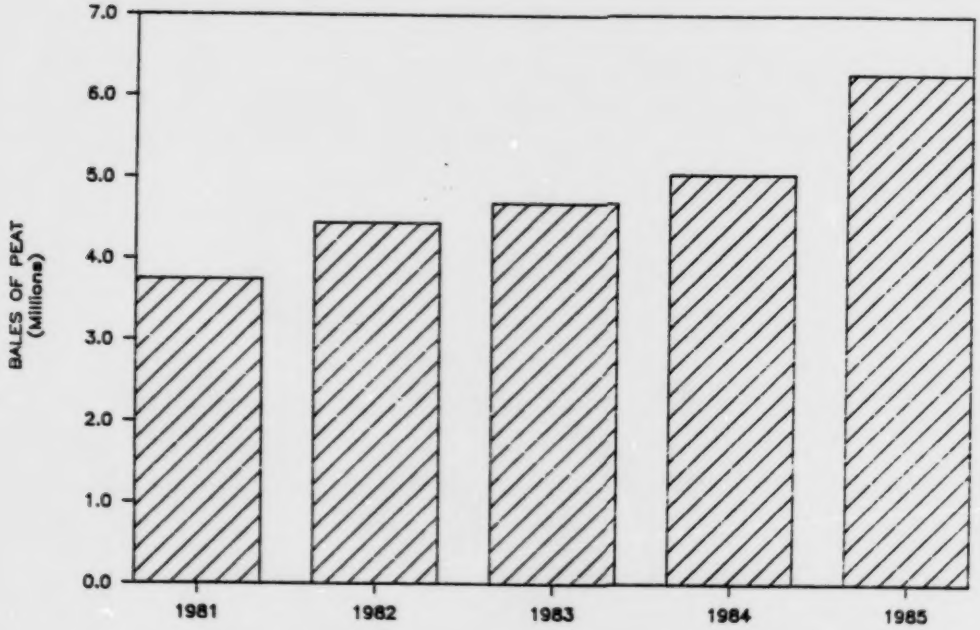
2. The Netherlands

Exports of peat from the Netherlands have also increased since 1981, and reached 8.2 million bales in 1985, up 70% from its exports of 4.8 million bales in 1981. The most significant markets of the Netherlands, in order of importance, are France, Belgium/Luxembourg and West Germany, as shown in Exhibit 8, opposite. Collectively, these three countries account for about 87% of the Netherland's exports. However, the Netherlands also serves markets outside of Western Europe, primarily the Middle East and Africa.

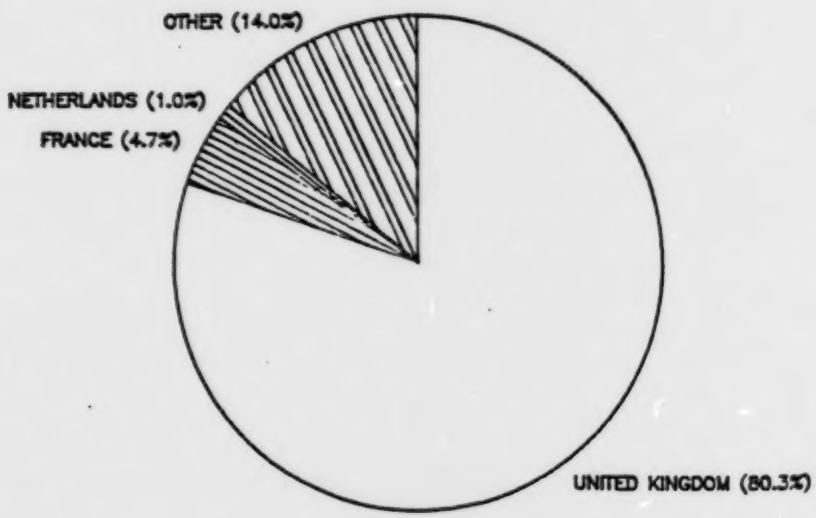
It should be noted that the Netherlands is also a major importer of peat moss and, in 1985, imported over 13 million bales from West Germany. The balance between production, imports, exports and inventories for the Netherlands is difficult to determine from the information

EXHIBIT 9

IRELAND: TOTAL EXPORTS



Peat Exports By Major Market (1985)



SOURCE: United Nations Trade Statistics

available. Thus, data may not accurately reflect production data for the Netherlands, and there may be some double counting of peat production and distribution in our analysis of world trade.

Although the Netherlands is a major exporter of peat, no organizations exist to coordinate research efforts or different interests in peatland management in the country.

3. Ireland

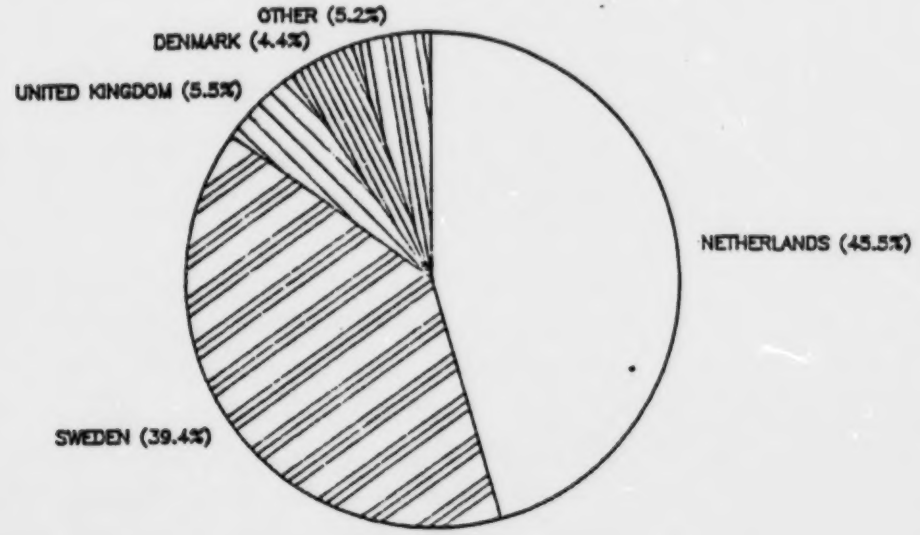
Irish horticultural peat exports increased by 68% between 1981 and 1985, from 3.7 million bales in 1981 to 6.3 million bales in 1985, as shown in Exhibit 9, opposite. Ireland's most important market for peat is the United Kingdom, which was the destination for over 80% of Ireland's peat exports. Other markets which the country serves are France and the Netherlands, with some shipments destined for the Middle East, Africa and Central America.

Peatland development in Ireland is dominated by the fuel peat industry and is controlled by Bord na Mona - the Irish Peat Authority. The Bord na Mona estimates that it will be able to supply peat products until 2030, when its deposits will be nearly exhausted.

In 1946, the Irish Government passed the "Turf Development Act" which made better provisions for the development, in the national interest, of the production, distribution and supply of peat in the state. For this purpose, Bord na Mona was created. It has the authority to acquire bogs, undertake peat research and development, and promote the sale of peat products. Bord na Mona is mainly concerned with the production of milled fuel peat for the generation

EXHIBIT 10

Peat Exports By Major Market (1985)



SOURCE: United Nations Trade Statistics

of electricity. It is also involved in briquette and sod peat production as well as horticultural peat production. The area of bog development in Ireland is 75,000 ha and Bord na Mona now owns a total of 82,000 ha of peatlands, developed and undeveloped.

4. Finland

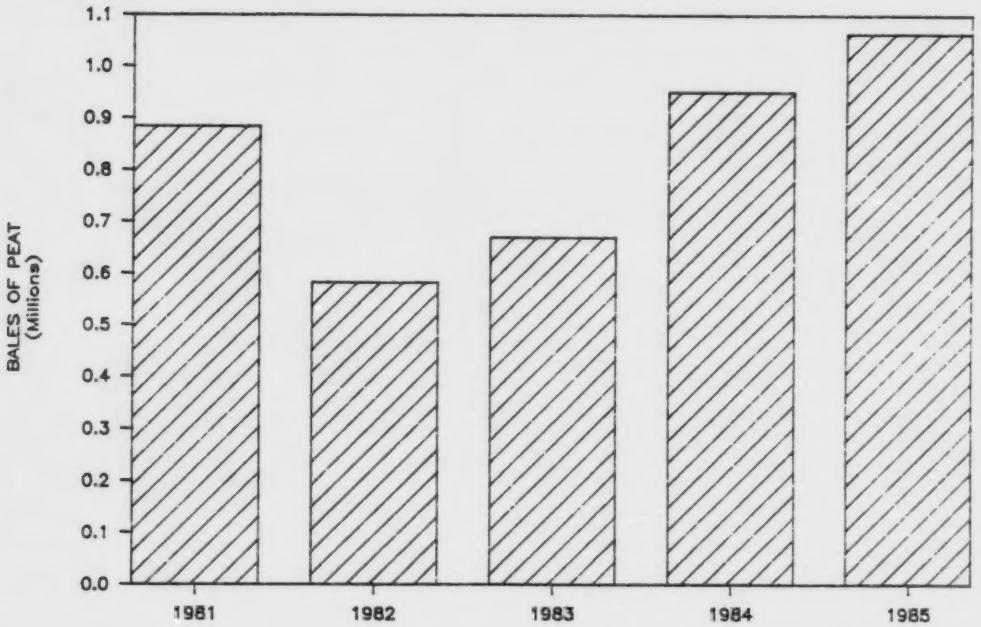
In contrast to the other peat exporters discussed above, Finland's exports declined, in general, between 1981 and 1985. In that five-year period, exports peaked in 1982 at a level of 2.6 million bales, then declined sharply in 1983 to 1.2 million bales. Since that low point, exports have exhibited some growth, climbing to 1.6 million bales in 1985, as shown in Exhibit 10, opposite.

Finland's major markets are the other Scandinavian countries such as Sweden and Denmark, and European countries such as the United Kingdom and the Netherlands. Finland's drop in exports to the Netherlands corresponds with West Germany's increased exports to that country. Thus, it appears that West Germany took this market from Finland.

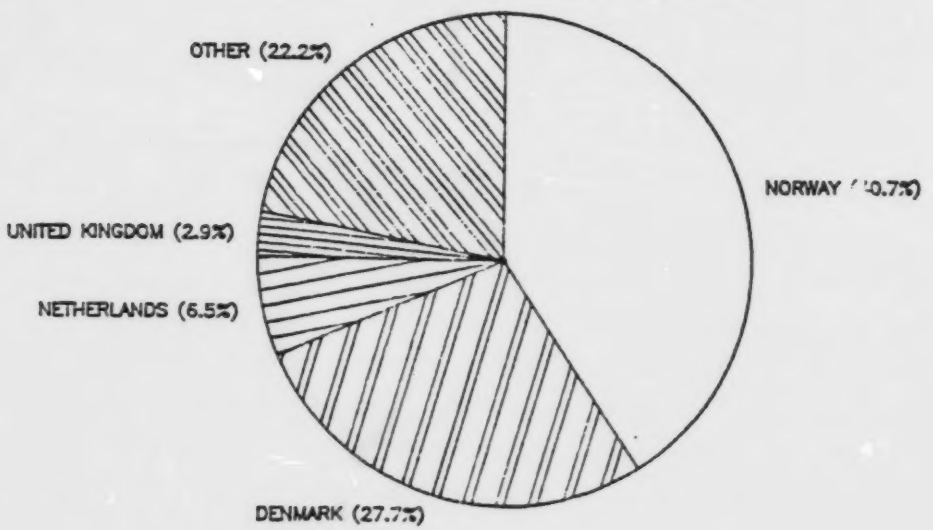
The Association of Finnish Peat Industries promotes the expansion of the peat industry, and the use and processing of peat for horticultural purposes. The Association operates as a liaison between the government and its member peat producers, and provides technical and marketing advice through consulting services and seminars. The Association has a membership of 28 producers and 184 supporting and individual members.

EXHIBIT 11

SWEDEN: TOTAL EXPORTS



Peat Exports By Maior Market (1985)



SOURCE: United Nations Trade Statistics

5. Sweden

Sweden's exports recovered from a low of 583,000 bales in 1982 to 1.1 million bales in 1985, as shown in Exhibit 11, opposite.

Significant markets for Swedish peat are Norway and Denmark, which account for 68% of Swedish peat exports, with small volumes destined for other European countries such as the United Kingdom and the Netherlands, as well as the Middle East and Africa.

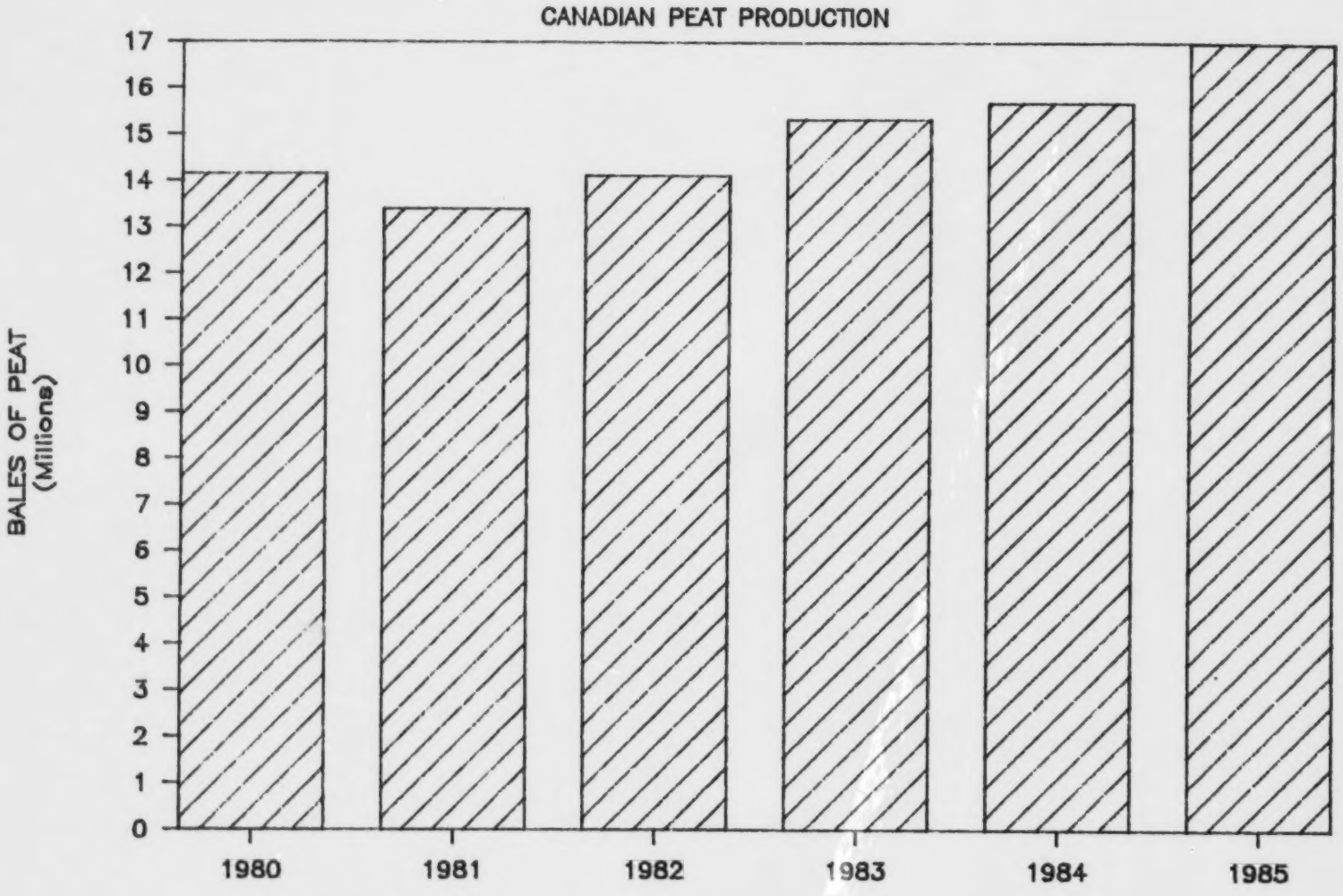
During the late 1960's, there was considerable work carried out in Sweden to establish the horticultural peat industry. Research was conducted by the two largest horticultural peat producers in Sweden: Hasselfors Garden AB (a private company) and Svenska Torv (a crown corporation).

The main objectives of these two corporations have been to establish fuel-peat production wherever suitable opportunities exist, develop alternative uses for peat (other than energy), improve or develop new methods of peat extraction, and extend production to a year-round operation through improved technology.

The Swedish Peat Producers Association was established in 1983, and its membership includes both fuel peat and horticultural peat producers. The main tasks of the Association are to organize a marketing strategy and provide a liaison between the government and its members.

In summary, the major western peat exporting nations, with the exception of Canada, are located in Europe. The trade statistics discussed above, which exclude peat used for fuel purposes, show a large volume of European inter-country trading.

EXHIBIT 12



SOURCE: Statistics Canada, 1985

However, to fully understand total European peat trading may require an analysis of both horticultural and fuel peat production and trade, and a comprehensive investigation into each country's fuel and horticultural peat resources. Analyses of both types of peat are necessary to ensure that all peat movements are analyzed, and that the inter-relationships between the two are identified and evaluated. We discuss this further in Chapter VI which examines world peat markets.

B. CANADA IN THE WORLD HORTICULTURAL PEAT MARKET

In 1985, 69 peat companies in Canada produced 17.0 million bales, up from 14.3 million bales in 1981. Exhibit 12, opposite, illustrates Canadian production from 1980 to 1985.

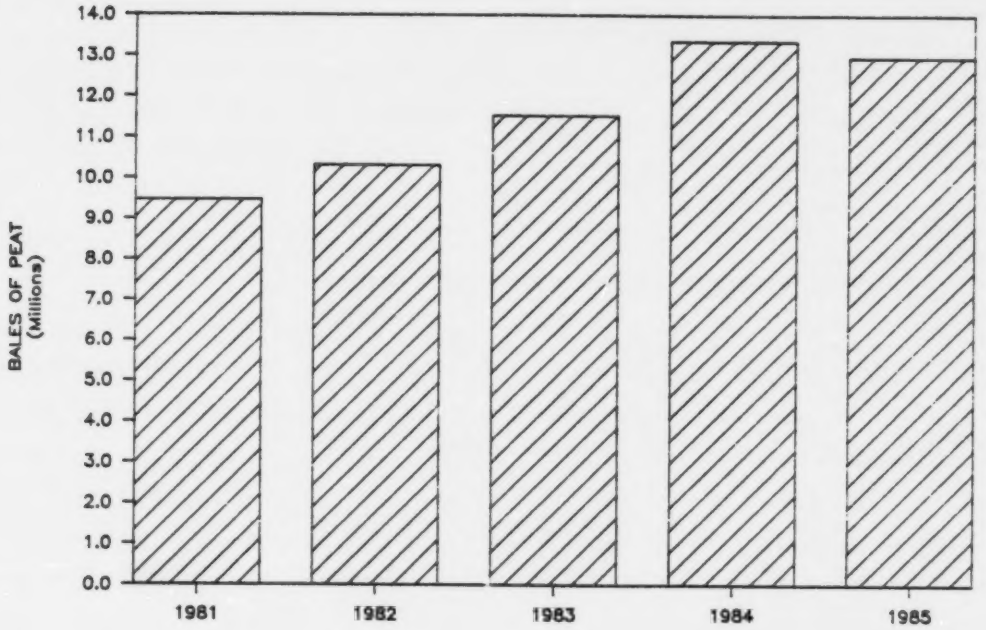
The use of peat (excluding fuel peat) in the domestic market is limited to horticulture applications by both consumers and professional growers such as nurseries, landscapers and mushroom producers. Present Canadian consumption is approximately 15% of production, with the remainder destined for export markets.

Canadian exports of peat experienced good growth between 1981 and 1984, but levelled off in 1985, as shown in Exhibit 13, over. The level of exports follows production closely as the Canadian producers rely heavily on export demand. Canada's major market for peat has been the United States, which accounted for 95% of Canadian exports in 1985. The next most significant market is Japan, accounting for 4.7% of exports in 1985. Other countries, about 19 in total, account for the remaining 0.3% of Canadian exports.

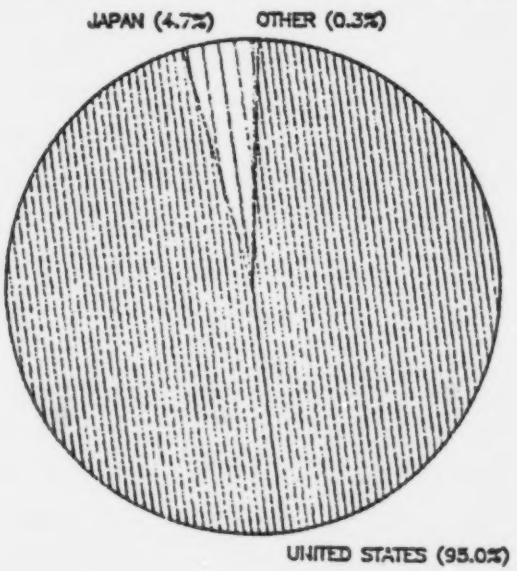
During the period 1982 to 1985, Canada lost share in the European markets as exports to Europe fell from 13,000 bales in 1982 to 725 bales in 1985. An analysis of the United Nations trade data shows that Canadian exports to Europe have been displaced by exports from other European countries.

EXHIBIT 13

CANADA TOTAL EXPORTS



Peat Exports By Major Market (1985)



SOURCE: United Nations Trade Statistics

During this period, the European peat industry developed its production methods which resulted in an increase in production volumes and a competitive cost structure. Thus, Canadian peat became too expensive because of the costs incurred for trans-Atlantic shipment. The significance of these shipping costs is illustrated by the following analysis. A bale of peat sells for about $3.90, FOB the bog in New Brunswick. The cost of shipping a bale from Saint John, New Brunswick, to Le Havre, France, is $7.80, based upon a container load of 373 bales. In addition to the container shipping charges are the costs of shipping the peat from the bog to Saint John and from Le Havre to its final destination in France. West German producers incur the shipping costs from the bog to the peat's final destination in France and these costs will be considerably lower than a Canadian producer's shipping costs. Another factor which influences the cost of peat in international markets is the exchange rates. Canadian producers experienced a favourable movement in exchange rates as the Canadian dollar fell from $.5206 Cdn = 1 Deutsche mark (DM) to $.5728 Cdn between 1982 and 1985.

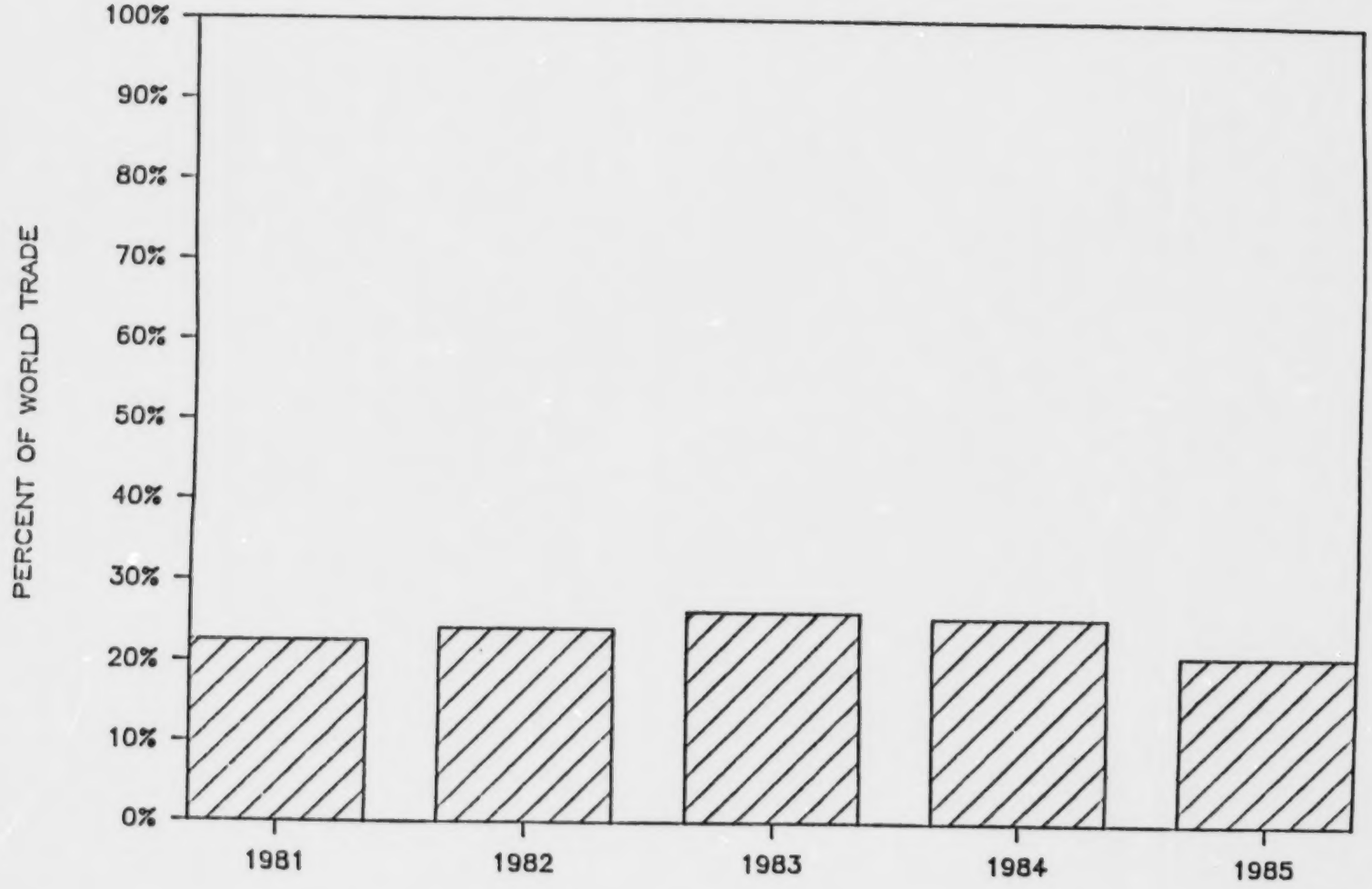
However, despite this favourable trend, Canadian producers appear to have lost market share to the European, particularly West Germany, and, to a lesser extent, the Netherlands, in all major peat markets except the United States and Japan. In the United States market, European producers face the freight cost disadvantages which Canadian producers face in shipping to Europe.

In the case of Japan, Canadian producers also have an advantage in freight costs as Japanese sources state that shipping to Japan via the Panama Canal is less expensive than shipping via the Suez Canal.

The analysis of peat shipments shows the importance of freight costs and a competitive price was the factor most often mentioned as a key to penetrating the foreign markets we examine in Chapter VI.

EXHIBIT 14

CANADA'S SHARE OF WORLD TRADE



SOURCE: United Nations Trade Statistics

Thus, Canada is a major player in the world horticultural peat market and is the second largest exporter of peat in the world, behind West Germany. Exhibit 14, opposite, shows Canada's share of the world trade between the years 1981 and 1985. The decline in Canada's share of world trade in 1985 reflects the large increase in intra-European trade.

As stated before, the balance among production, imports, exports and inventories for the two major exporters, West Germany and the Netherlands, is not available from the data collected. The peat which is shipped from one country to the other, and then re-exported to a third country, is subject to double counting. The effect of this double counting is to decrease Canada's actual share of world production, but not its share of world trade.

In summary, the key world exporters of horticultural peat in 1985 were:

- West Germany - 30.9 million bales
- Canada - 12.9 million bales
- the Netherlands - 8.2 million bales
- Ireland - 6.3 million bales

Together, these four countries accounted for over 90% of world peat exports, with West Germany alone representing about 50% of total world trade.

The three major European producers primarily serve the markets in Europe and the Middle East. Smaller shipments have been made to the Pacific Rim, and to South American and North American markets.

Canada, the key exporter in North America, has developed markets in the United States and Japan. It has also exported small shipments of peat to Europe, the Middle East and South American markets.

The trade patterns for the period 1981 to 1985, inclusive, indicate that Canada has lost market share in Europe and the Middle East to the major European exporting countries which have greatly increased their exports and their production. However, Canada's lost markets in Europe have been more than offset by increases in exports to the United States and Japan, and therefore, Canada's peat industry has exhibited growth.

The trade patterns indicate the importance of price in peat markets. It is not surprising that the European producers dominate the markets in Europe and the Middle East since they are nearest to them. However, these producers have not made inroads to the North American or the Japanese markets. Canada has an obvious geographic advantage in the North American market, and European producers' ocean shipping costs to Japan are higher than Canada's. Japanese importers state that shipping goods through the Panama Canal is less expensive than through the Suez Canal.

West Germany has been the most aggressive European producer and, during 1985, shipped peat to about 40 countries. This compares to 24 countries for the Netherlands and 18 countries for Ireland. To put it in perspective, West Germany has seven export markets which are much larger than Canada's second largest market, Japan. However, West Germany is reportedly losing market share in Australia to New Zealand, as the latter country develops its peat resources. Canada should monitor New Zealand's peat exports closely, as this producer is well located to penetrate the Japanese market in direct competition with Canadian producers.

IV. THE NORTH AMERICAN MARKET FOR HORTICULTURAL PEAT MOSS

The purpose of this chapter is to provide a profile of the North American market for horticultural peat. Our analysis includes Canada, but is primarily focused on the United States. Peat is produced in each of the ten provinces of Canada, and with the exception of Ontario, no province imports a large portion of its peat moss requirements.

By contrast, the United States imports about 35% of its annual horticultural peat needs and, in particular, about 98% of its sphagnum peat. Thus, it represents a major market of more interest to New Brunswick producers, who mine sphagnum, than the Canadian market.

This part of the report begins with a discussion of the types of peat used, the size of the North American market and the major supplying countries. The Canadian U.S. markets are then profiled in more detail.

A. TYPES OF PEAT

Horticultural peat consumption in North America includes four types of peat: reed-sedge, hypnum moss, sphagnum moss and humus. They are all organic conditioners which modify soil texture, or the distribution of soil particle size, to improve aeration and drainage.

The major uses for each type of peat in North America are general soil improvement and nurseries. Each of the peats has characteristics which make them more suitable for some applications than others. Below we briefly discuss the properties of each type as outlined by Nancy Agnew, an Assistant Professor of Horticulture, Iowa State University, Ames, Iowa.

Sphagnum-moss peat is a fair soil conditioner. This peat is light weight, has excellent water holding capabilities and pH range of 3.0 to 4.0 which makes it excellent for use with ericaceous (acid-loving) plants. However, sphagnum has a fast rate of decomposition, which makes it a poor choice if the addition of stabilized organic matter is desired. In addition, the peat is low in nutrients, containing only 0.6% to 1.4% nitrogen.

Hypnum-moss peat is a good soil conditioner. Its moderate rate of decomposition makes it fair as a stabilized organic matter addition

and with a pH range of 5.0 to 7.0, hypnum is good for non-ericaceous plants. This peat is rich in nutrients, 2.0% to 3.5% nitrogen, and has good water-holding capabilities.

Reed-sedge peat is partially decomposed reeds, sedges, marsh grasses and cattails. It characteristics vary widely from bog to bog and a low-lime reed-sedge peat will have a pH of 4.0 to 5.0 and contain between 1.5% and 3% nitrogen. Overall, reed-sedge is a good soil conditioner, with medium water-holding capabilities and a slow rate of decomposition, and is a good source of stabilized organic matter.

Thus, while certain circumstances will favour one peat moss over another, they are typically interchangeable as general soil conditioners.

B. NORTH AMERICA

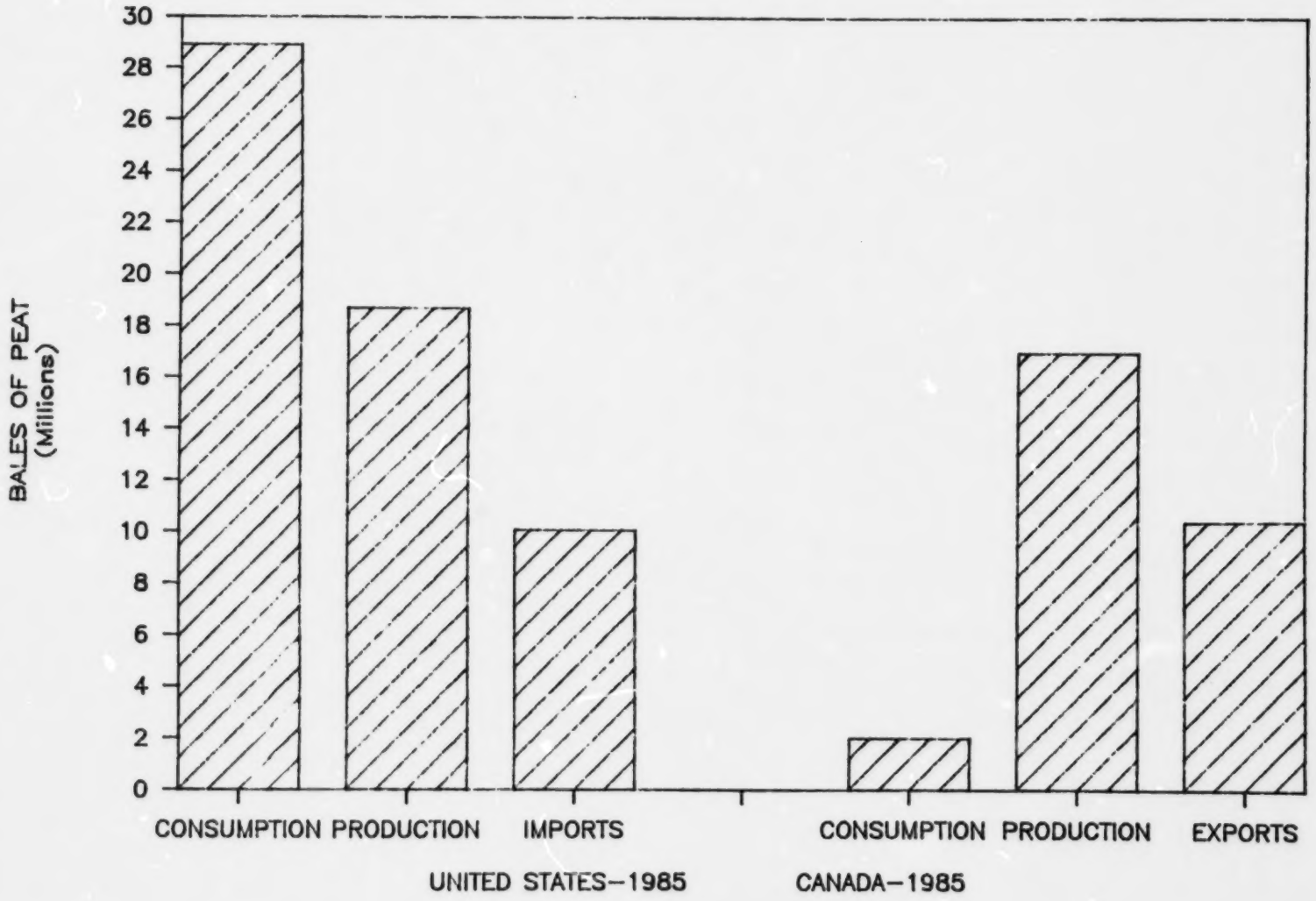
We estimate consumption of horticultural peat moss of all types in North America during 1986 at just under 1.4 million tonnes, or about 40 million bales. This includes about 16.7 million bales of sphagnum, 15.2 million bales of reed-sedge, 6.5 million bales of humus and 1.1 million bales of hypnum. Our market size estimate is based on an analysis of the following information:

- Canadian peat production by Statistics Canada,
- U.S. peat production statistics by the U.S. Bureau of Mines, and
- U.S. imports statistics from the U.S. Bureau of Mines.

The United States represents about 95% of the North American market and consumed over 37.4 million bales (1.3 million tonnes of peat moss) during 1986. This included about 15.2 million bales of reed-sedge, 14.7 million bales of sphagnum, 6.5 million bales of

EXHIBIT 15

TRADE PATTERNS BETWEEN CANADA AND U.S.



SOURCE: United States Bureau of Mines, Statistics Canada

humus and 1.1 million bales of hypnum moss. By comparison, Canada consumed about 2 million bales during 1985, of which over 99% was sphagnum moss.

Industry sources report that sphagnum peat has more specialized uses and is favoured by commercial growers as a medium for starting plants. On the other hand, reed-sedge is a lower cost peat and is used when sterility is not a concern.

North American producers supply over 99% of the peat consumed in their market. However, within the market, Canada is a major exporter of peat, while the United States is a net importer. Exhibit 15, opposite, illustrates the trade patterns of Canada and the United States. It shows that Canada exports over 85% of its peat production and imports virtually no peat while the United States depends on imports to meet demand.

The United States exports virtually no peat and imported about 14.5 million bales of peat, or 35% of its domestic consumption, in 1986. Thus, with Canada supplying its own needs and 99% of the United States' imports, it is apparent that nearly all North American demand is satisfied by North American producers.

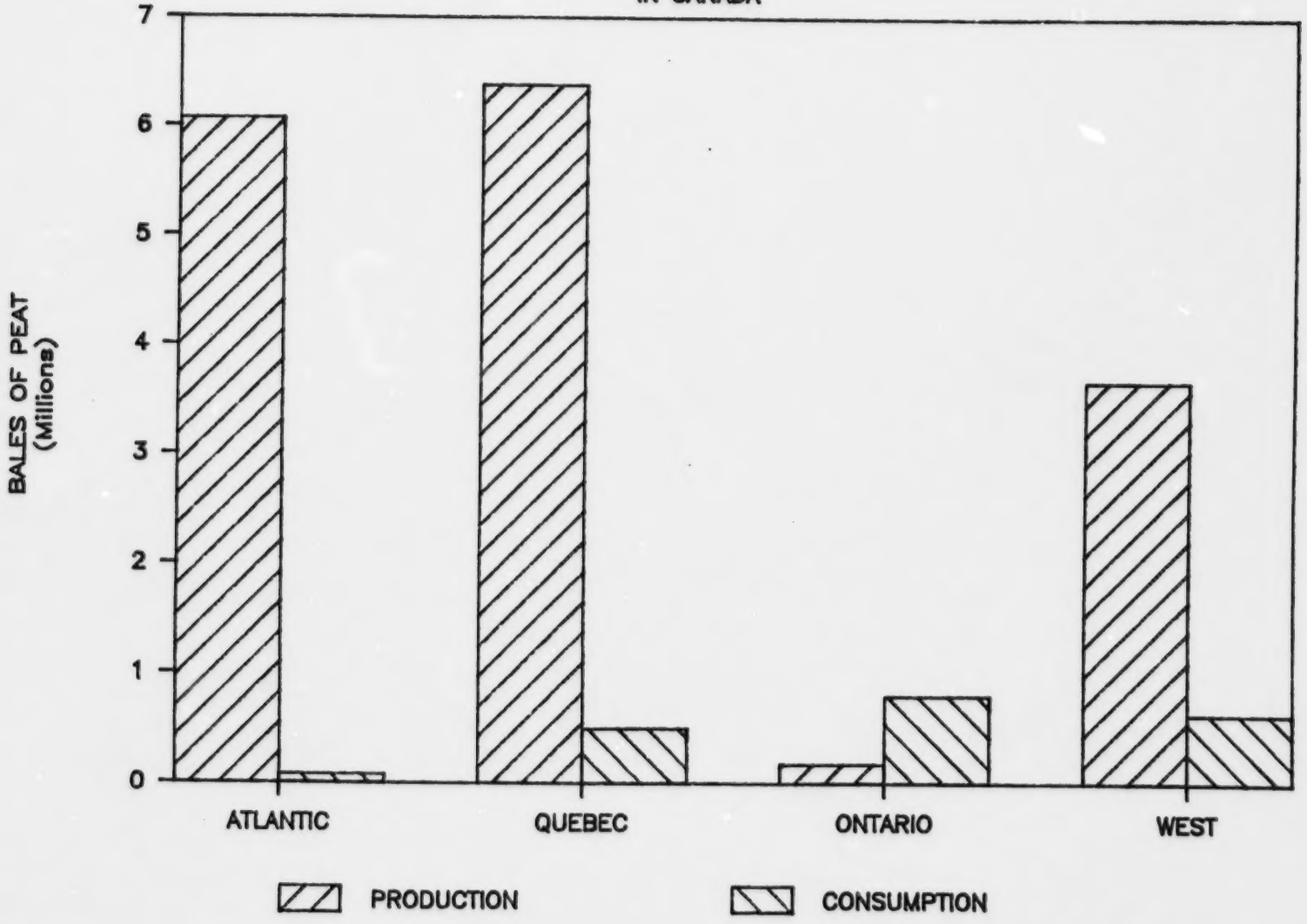
In addition to the United States, Canada exports peat to about 19 other countries. Japan represents Canada's other principal market and is discussed in more detail in Chapter VI, along with other select international markets.

Note: Please note that, in Exhibit 15, for the United States, production plus imports does not equal consumption. For Canada, production does not equal consumption plus exports. The differences occur because of changes in inventory not reflected in the analysis.

EXHIBIT 16

PRODUCTION AND CONSUMPTION OF PEAT

IN CANADA



C. THE CANADIAN DOMESTIC MARKET

Statistics Canada reports that about 15% of Canadian production is sold in the domestic market and the remaining 85% is exported. This results in a Canadian market of about 2 million bales, all of which is supplied by Canadian producers. Consumption is about 99% sphagnum with very small amounts of hypnum moss produced and consumed in Ontario and Alberta. Statistics Canada data does not distinguish between the different types of peat moss. Over 90% of all production is packaged.

The Canadian market grew rapidly through the 1960's and 1970's as the peat industry evolved and the market awareness and acceptance of peat increased. However, according to distributors, the growth has levelled off in the 1980's and they have looked to foreign markets for growth.

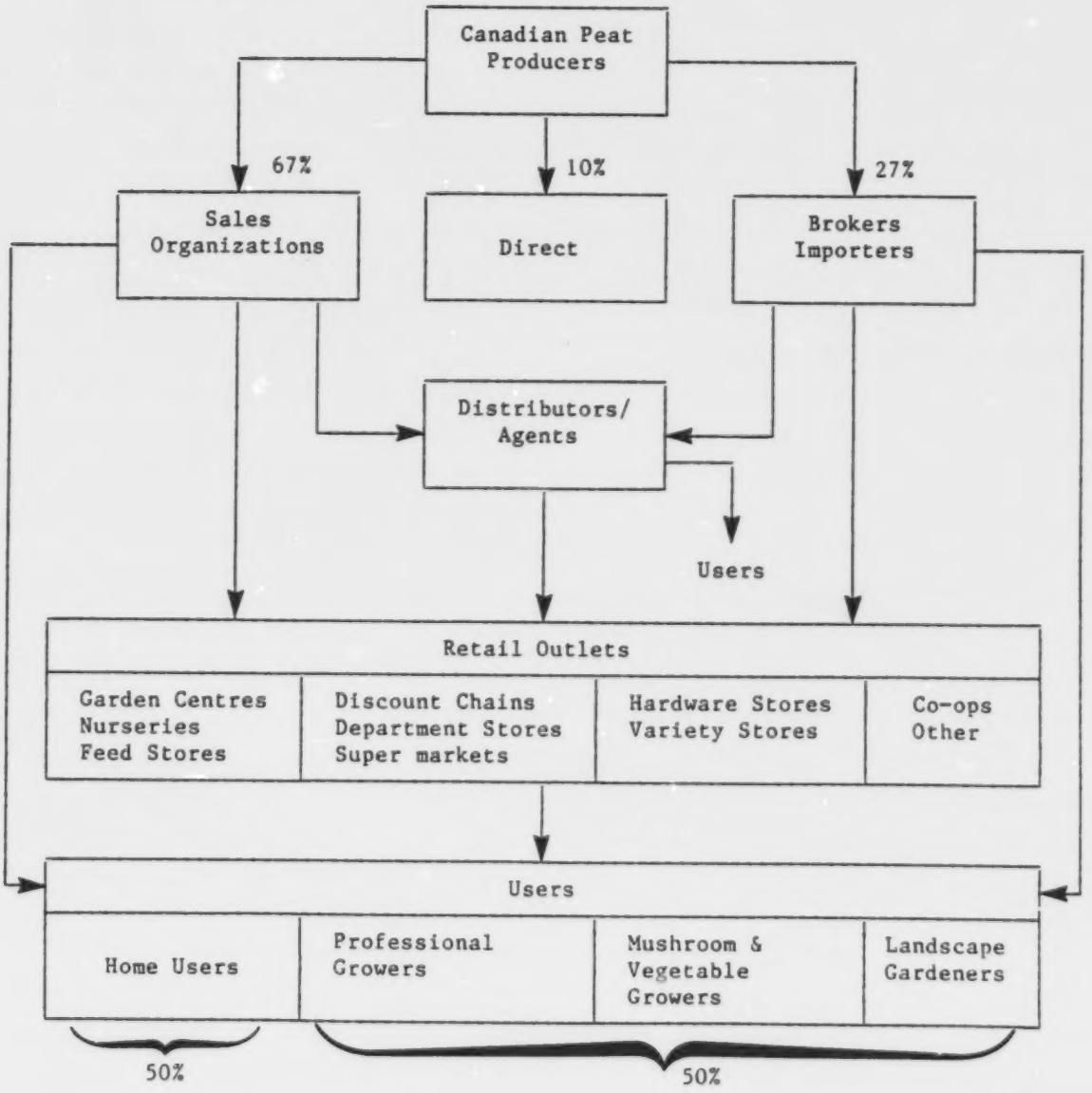
A recent report for the Ontario Ministry of Agriculture and Food estimated that professional users and growers represent about 45% to 50% of the Canadian market for horticultural peat. Professional users include flower and vegetable greenhouses, mushroom growers, commercial nurseries, landscape contractors, and forestry nurseries.

Consumer use of peat accounted for the remaining 50% to 55% of the market. Consumers use the peat for gardening and landscaping. They purchase peat at retail outlets such as garden centres, hardware stores, nurseries and department stores. These findings are supported by our analysis.

With the exception of Ontario, most regions of Canada serve their local markets and export large quantities of peat in order to maintain economic production volumes. Exhibit 16, opposite, illustrates the estimated market size of the various regions in

EXHIBIT 17

DISTRIBUTION CHANNELS



Canada and the peat production from each region. It shows that the major peat-producing regions have production which greatly exceeds local consumption, and rely upon export markets to survive. Ontario does not produce sufficient peat production to meet provincial demand and receives its requirements from Quebec, New Brunswick and Manitoba. Both Quebec and New Brunswick supply the Southern Ontario markets, while Manitoba serves the Northwestern Ontario markets.

Distribution channels for horticultural peat in Canada are quite complex due to the number and types of intermediaries serving the market. Exhibit 17, opposite, illustrates the structure of the available distribution channels. Typically, the larger producers deal more directly with the end user and have marketing and sales organizations. Smaller producers tend to sell through brokers and wholesale distributors which carry a variety of horticultural products.

In 1973, New Brunswick producers sold peat to three types of buyers. The largest group were United States' sales companies, who accounted fro 85% of the peat sold. The Kates, Peat Marwick & Co., report, "The New Brunswick Peat Moss Industry", May 1973, does not indicate whether or not these sales companies are affiliated with New Brunswick producers. The second group, brokers and importers accounted for 14% of sales, and the remaining 1% went directly to end users.

Our survey of New Brunswick peat producers indicated that the pattern has changed as follows. Sales organizations, affiliated or owned by the producers, now account for 63% of sales, by volume. The remaining volume goes through brokers (27%) and direct to end users (10%). The change in sales patterns reflect the following trends:

- Large producers are setting up selling organizations in the United States to better serve this important market.

- Where possible, New Brunswick Peat producers are selling directly to the end user, to gain control over the distribution process and minimize its costs. This trend also reflects the growth in demand for peat, by companies, to the extent that they can now buy sufficient volumes to warrant direct purchases from the producers.

- The start-up of smaller producers who rely heavily on brokers to distribute their product in North America and the increasing shipments to Japan where brokers are used to distribute peat to end users.

The other major change since the Kates report is the increasing purchases of the commercial user market segment which includes professional growers, mushroom and vegetable growers, and landscapers. In 1973, commercial users accounted for 30% of peat consumption and in 1985 they accounted for 45% to 50%. We discuss this trend further in Chapter V of this report.

We do not have sufficient information to document the volumes that pass through each channel to the users. However, the trend, as reported by industry sources, is towards shorter channels to minimize the distribution costs and gain as much control over the channel as possible.

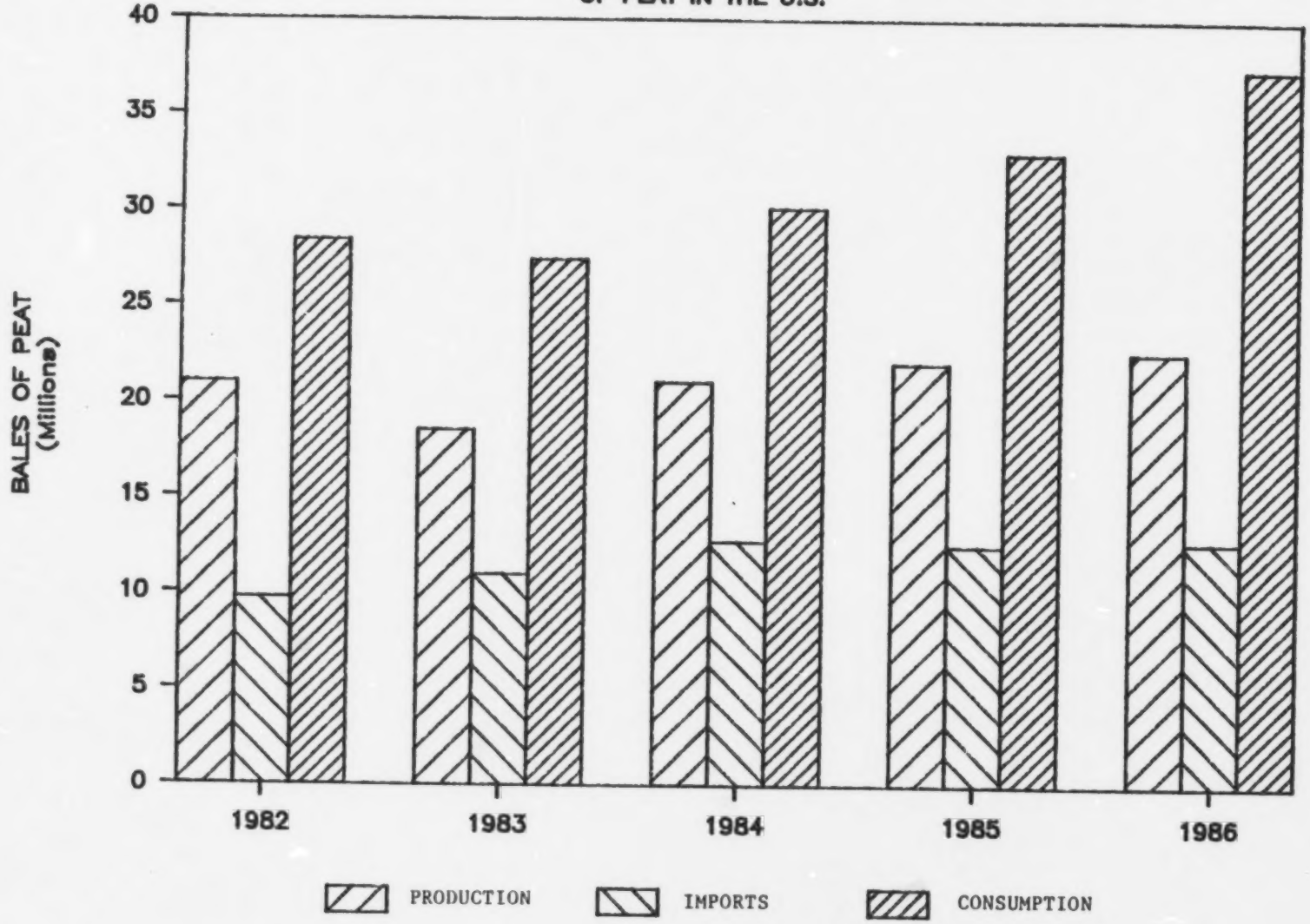
The Canadian market does not appear to offer significant opportunities for New Brunswick producers for the following reasons:

- The market is relatively small, about one-twentieth the size of the American market. For example, Ontario, the largest peat

EXHIBIT 18

CONSUMPTION, PRODUCTION & IMPORTS

OF PEAT IN THE U.S.



importing province in Canada, consumes about one million bales, a small market relative to the Atlantic Region of the United States which consumes over 8.5 million bales. As well, the growing season in Canada is considerably shorter than in the United States. Thus, the commerical growing industries, which are large users of peat, are less well developed in Canada as compared to the U.S.

- The Western Provinces, Manitoba, Saskatchewan, Alberta and British Columbia, are unavailable to New Brunswick producers who cannot compete with local suppliers because of freight costs.

- Quebec is a large producer and exporter; therefore, this market does not appear to offer growth opportunities for New Brunswick producers.

Thus, the primary focus of this study was the United States. The following sections detail our findings for that country.

D. THE UNITED STATES

The U.S. Bureau of Mines reports that the United States' consumption of peat for horticultural uses (including the production of soil mixes) was 1,290,000 tonnes, or about 37 million bales, in 1986. This represents a 13% increase over consumption in 1985. The increase in consumption was covered by a 4% increase in domestic production, a 2% increase in imports, and a reduction in inventories.

Exhibit 18, opposite, presents the consumption, domestic production and imports of peat moss in the U.S. for the period 1982 to 1986. We comment as follows;

- The market has shown an annual growth rate of about 2%, with a drop in 1983.

- About 51% of domestic production sold, and 100% of imports are packaged. The packaged peat comprises 14.5 million bales of sphagnum, 8.9 million bales of reed-sedge, 1.9 million bales of humus and .5 million bales of hypnum.

- Imports are increasing their share of the market. Net import reliance (defined as imports - exports + adjustments for government and industry stock changes), as a per cent of apparent consumption, has increased from 29% in 1982 to 39% in 1986.

- Canadian products have accounted for over 99% of imports in each year.

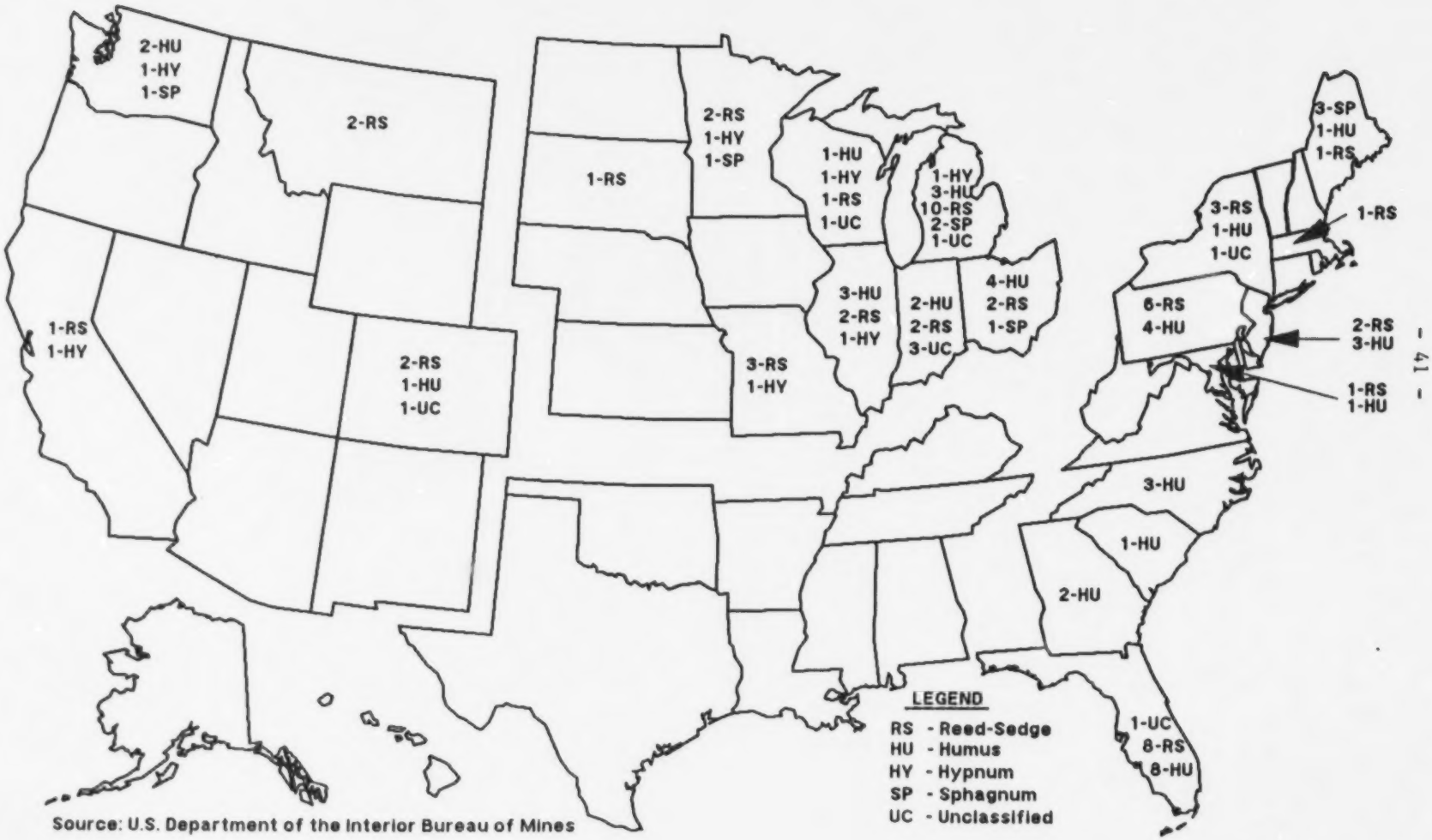
For the ten years prior to 1983, U.S. demand for horticultural peat grew at an average rate of 1.6%. Agricultural demand for peat is forecast by the U.S. Bureau of Mines to grow annually at an average rate between 2% and 3.5% to the year 2000. This would result in a market for horticultural peat of over 43.5 million bales in 1990.

Unlike the Canadian market, the United States market consumes a variety of peat. Reed-sedge, with 40% of the market, and sphagnum, with 39%, account for the majority of the market. The remaining 21% of consumption includes 17% humus moss, 3% hypnum and 1% of other, unclassified peat.

Production of peat in the United States is not predicted to grow as fast as domestic demand and, as a result, imports will account for an increasing share of the market, over time.

EXHIBIT 19

PEAT OPERATIONS IN THE UNITED STATES



Source: U.S. Department of the Interior Bureau of Mines

During 1986, 83 U.S. firms actively produced peat from 97 operations, in 22 states. The principal peat producing states, Florida and Michigan, accounted for about 40% of U.S. production, respectively. The next three largest producing states, Indiana, Illinois and Colorado, accounted for an additional 13% of U.S. production. Thus, five states produce about 78% of the peat moss in the United States. Exhibit 19, opposite, shows peat production by type and location.

E. KEY MARKETS IN THE UNITED STATES

We divided the United States into four regions (Atlantic, North Central, South Central and Western), as outlined in Exhibit 20, over. This section examines market variables which lend themselves to regional analysis. Chapter V of this report examines the United States market from an end-user perspective.

1. Regional Consumption Patterns

The Atlantic region consumers the largest quantity of peat. We estimate that the Atlantic region consumes about 13 million bales of peat (460,000 tonnes), and accounts for 35% of peat moss purchases, by volume, in the United States. Exhibit 21, over, illustrates the estimated market size of each region. The North Central region is the second largest area, accounting for 30% (11.3 million bales) of consumption. The South Central and Western regions are significantly smaller, representing 20% (7.5 million bales) and 15% (5.8 million bales) of the market, respectively.

We have based our regional market size estimates on an analysis of peat production within each region, imports into the area, area population and the number of professional horticultural growers in each area.

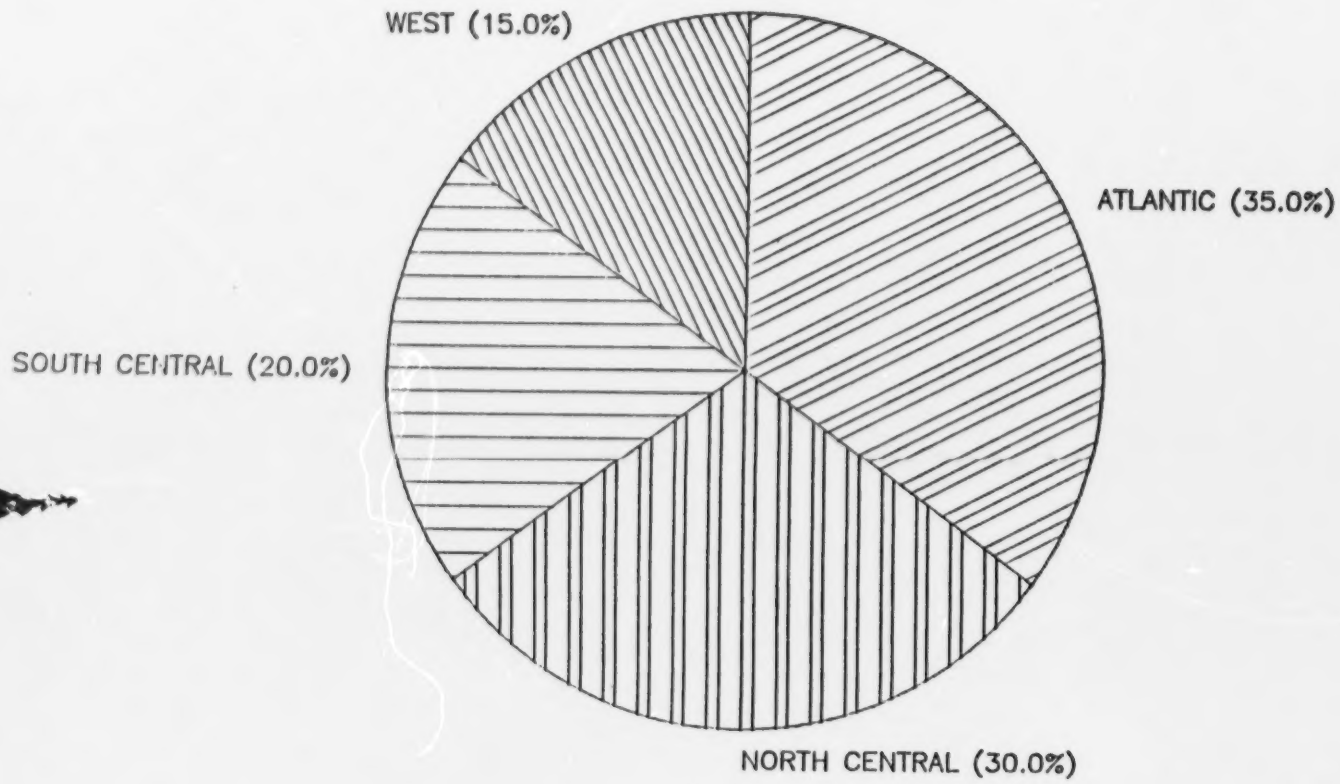
EXHIBIT 20

BREAKDOWN OF STATES WITHIN EACH REGION

ATLANTIC	NORTH CENTRAL	SOUTH CENTRAL	WEST
Maine	Michigan	Kentucky	Montana
New Hampshire	Ohio	Tennessee	Wyoming
Vermont	Indiana	Alabama	Idaho
Massachusetts	Illinois	Mississippi	Washington
Connecticut	Wisconsin	Louisiana	Oregon
Rhode Island	Minnesota	Arkansas	Colorado
New York	North Dakota	Oklahoma	New Mexico
New Jersey	South Dakota	Texas	Arizona
Pennsylvania	Nebraska		Utah
Delaware	Iowa		Nevada
Maryland	Missouri		California
Virginia			Alaska
North Carolina			
South Carolina			
Georgia			
Florida			

EXHIBIT 21

UNITED STATES ESTIMATED PEAT CONSUMPTION BY REGION



SOURCE: CLCG Estimate

EXHIBIT 22

1986 U.S. PEAT IMPORTS BY REGION AND BY ORIGIN
(Thousands of Bales)

IMPORTS BY REGION	CANADA	OTHER COUNTRIES
Atlantic	8,665.1	5.5
North Central	3,436.5	0.6
South Central	0.5	2.0
West	2,448.2	0.6
	14,550.3	8.7

SOURCE: U.S. Bureau of Mines, 1986

2. Ports of Entry

Atlantic Region entry points account for 60% of imports. An analysis of the entry points for peat moss shipments into the U.S. shows that 60% of imports enter the United States through ports of entry located in the Atlantic Region. Entry points in the North Central Region account for another 24% of peat moss imports. Exhibit 22, opposite, provides details on imports, by region.

New Brunswick and Quebec producers ship to the United States through the Atlantic and North Central Region's ports of entry. Manitoba, Saskatchewan and Alberta producers ship to the North Central Region, while British Columbia and Alberta both ship to the U.S. through Western Region ports of entry.

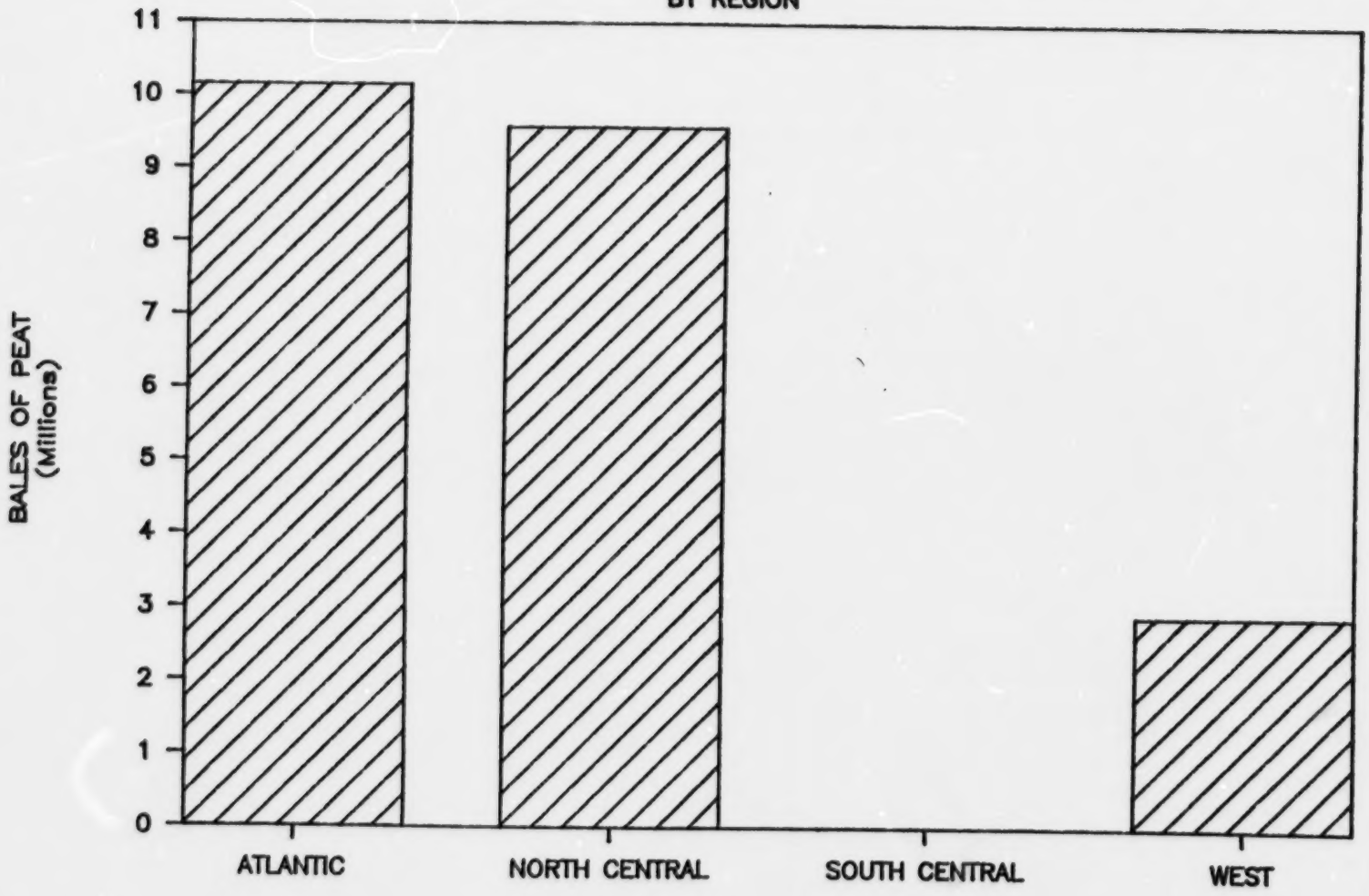
Very little peat enters the U.S. through South Central entry ports, nor does the region produce peat. In fact, the U.S. Bureau of Mines does not list any producing company for states in that region. The South Central Region's demand for peat is met by shipments from New Brunswick, Quebec, Manitoba, and peat producing states in the Atlantic Region, primarily Florida, and North Central Region, Michigan and Minnesota. Our analysis indicates that Canadian peat accounts for over 60% of the peat consumed in the South Central Region.

The Canadian peat is virtually 100% sphagnum peat moss while the United States operations will be supplying reed-sedge, humus and hypnum. Distributors in the South Central area report that they have sold Canadian peat which has originated in New Brunswick, Quebec and Manitoba. Their supply depends upon what the broker, typically located in the Atlantic or North Central Regions, had in stock at the time of their order.

EXHIBIT 23

ESTIMATED U.S. PEAT PRODUCTION

BY REGION



3. Concentration of Domestic Production

Production of peat in the United States is quite concentrated. As discussed previously, five states, Florida, Michigan, Illinois, Indiana, and Colorado, account for about 78% of U.S. production which totaled about 23 million bales in 1986. Ten operations, with annual capacities of over 650,000 bales, account for 51% of U.S. peat production. They include three reed-sedge operations and one humus operation in Michigan, four reed-sedge operations and one humus operation in Florida, and one reed-sedge operation in Illinois. Exhibit 23, opposite, provides estimates of peat production, by region.

The Atlantic Region, led by Florida, is the largest peat producing region in the U.S., with an estimated production of 10.1 million bales which represents 44% of domestic peat production in the United States. Florida's peat production is primarily reed-sedge with some humus; sphagnum peat and hypnum peat are not produced. Nine of the other 15 states in the Atlantic Region produce peat. Pennsylvania, accounting for about 2% of the U.S. production or under 500,000 bales, is the second largest producer in the Region.

The North Central Region is the second largest region, with an estimated production of 9.6 million bales. The key producing state is Michigan, which accounts for about 5.7 million bales of peat including reed-sedge, humus, hypnum and sphagnum. Seven of the other ten states in this area produce peat moss, with Illinois and Indiana being the next largest producing states, each with production of under 500,000 bales.

The Western Region has a small output, estimated at less than 50,000 bales annually. Only four of the 12 Western states produce peat, including the reed-sedge, sphagnum, hypnum and humus types. Colorado, which has reed-sedge bogs, is the

EXHIBIT 24

PEAT PRICE BY BALE SIZE AND REGION
(Cdn.$)

BALE SIZE REGION[1]	DISTRIBUTOR DELIVERED COST[2]	RETAIL PRICE[2]
4 (Atlantic)	$ 6.30 - $ 8.40	$11.20 - $14.00
4 (North Central)	$ 5.60 - $ 7.70	$11.20 - $14.00
4 (South Central)	$ 7.00 - $ 9.10	$14.00 - $16.80
4 (West)	$ 7.70 - $ 9.80	$10.50 - $13.30
6 (Atlantic)	$ 7.70 - $ 9.80	$14.00 - $16.80
6 (North Central)	$ 8.40 - $ 9.80	$14.00 - $16.80
6 (South Central)	$ 9.80 - $12.60	$16.80 - $19.60
6 (West)	$ 9.80 - $12.60	$14.00 - $16.80

SOURCE: Survey of U.S. Distributors and Brokers, 1986/87

1 Bale size is shown in cu. ft. with a 2:1 compression ratio

2 $1.40 Cdn. = $1.00 U.S.

largest producing state in the Western Region and is increasing its peat output.

The South Central Region produces no peat.

4. Pricing

The price of United States-produced peat varies greatly and is considerably lower than the price of the imported Canadian sphagnum peat. Statistics show that, on average, bagged Canadian sphagnum is over six times as expensive reed-sedge peat sold in bulk, and about twice as expensive as bagged U.S. sphagnum. Exhibit 24, opposite, presents the delivered costs and retail prices for Canadian sphagnum.

The Atlantic region has the lowest prices for Canadian peat and this is due to two factors. First, shipping costs to this area from Quebec and New Brunswick, the key peat producing provinces, are typically lower. Secondly, the competition is keen among the producers in the two Canadian Provinces and domestic U.S. producers in the Atlantic Region, which is the largest peat-producing region in the United States.

Producers in Florida, the largest peat-producing state, sell reed-sedge peat in bulk as low as Cdn$ 5.60 per tonne FOB the bog. They also package some reed-sedge peat in 1.5 ft^3 bags, not compressed, for consumer sales. These bags weigh about 40 pounds and sell for about Cdn$ 2.75 at the retail level. Florida producers ship as far north as the Carolinas and as far west as Louisiana. They cite transportation costs as the factor limiting their geographic expansion.

Prices in the North Central Region are slightly higher than those in the Atlantic Region but lower than prices in both the South Central and the Western Regions. They reflect the level

of competition, less than in the Atlantic Region but greater than in the other two regions, and the higher shipping costs for imports.

The United States producers in the North Central Region also state that freight costs limit the geographic scope of the market they can serve. These producers appear to ship as far south as Tennessee and report that their coverage typically covers a two to three state radius, These producers sell reed-sedge peat in bulk for $11.90 per cubic yard, FOB the bog. A cubic yard equals 27 cubic feet or a volume of peat slightly larger than two 6ft^3 bales of compressed peat. Michigan producers also package reed-sedge in 1.5 ft^3 bags, uncompressed, for retail sale. Their price to retailers, FOB the retailer's store, varies from $1.10 per bag to $1.80 per bag, depending upon the shipping distance.

In the South Central Region, the price of peat is higher and the Canadian producers face less competition. The region produces no peat and American producers in the Atlantic and North Central Regions do not ship much peat into the South Central Region, due to high transportation costs.

The transportation costs for the American reed-sedge producers are a larger factor than for Canadian sphagnum producers for two reasons. First, the American producers do not package their reed-sedge for shipping as well as the Canadian package their sphagnum. The reed-sedge peat is not compressed and typically weighs more for equivalent volumes. Secondly, the value of reed-sedge peat is less and thus, the product can not absorb freight costs as well as higher-valued products.

We did not obtain detailed pricing information on the Western Region, as freight costs make it unreasonable for New Brunswick producers to compete with producers in Western Canada

Thus, the key markets for peat in the united States are in the Atlantic and North Central regions of the country. Both these regions are peat producing areas and rely on both domestic production and imports to meet demand.

Domestic U.S. peat is primarily reed-sedge and humus with limited amounts of sphagnum and hypnum. The United States imports over 98% of its sphagnum peat requirements.

The Atlantic and North Central Regions have the lowest prices which correspond to the lower costs of the peat shipments from Quebec and New Brunswick and the availability of domestic peat. The South Central and Western Regions have the highest prices which reflect the low level of domestic production in these regions and the consequent higher freight charges incurred from the distant suppliers who serve these markets.

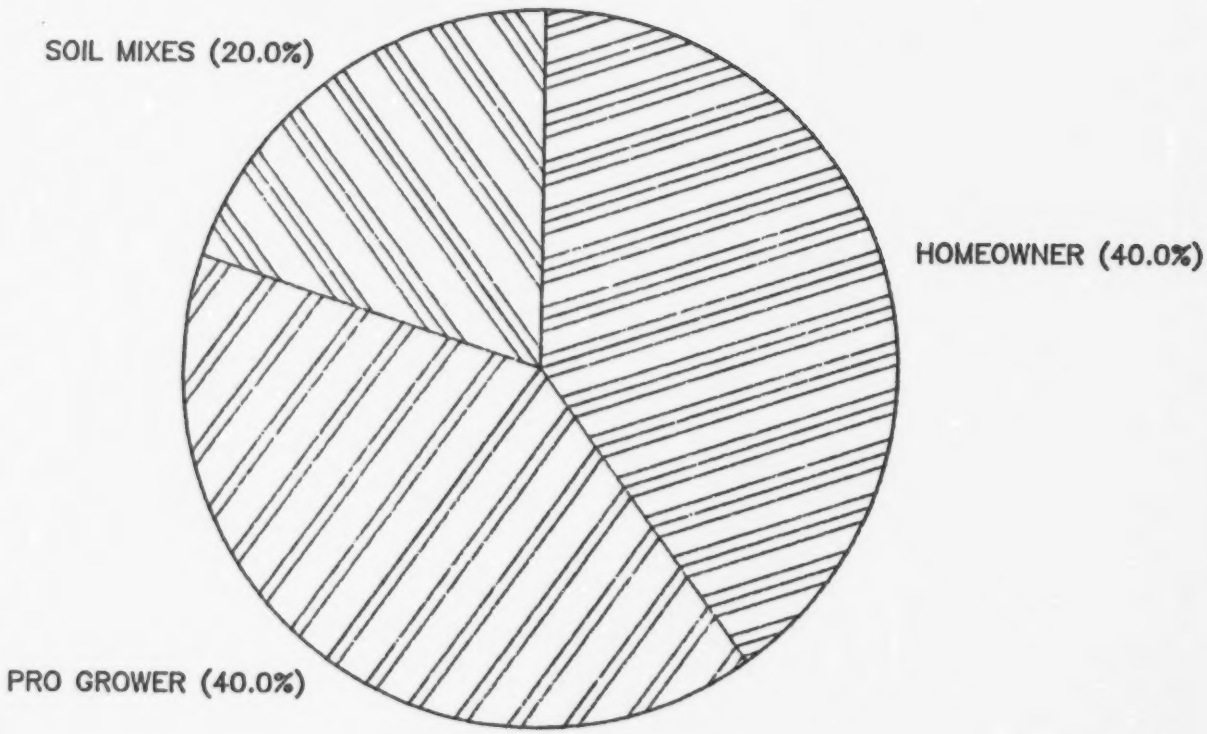
F. SUMMARY

In summary, the United States will continue to account for over 90% of the peat moss consumed in North America and will represent the major market for peat products. Government sources, using a linear regression analysis of historical end-use data with the Federal Reserve Board Index of Agricultural Chemicals as the economic indicator, project that demand for peat will grow by 2% to 3.5% each year until 1990. The coefficient of determination was considered significant. However, actual demand is expected to exceed the statistical projection. This growth rate could result in an additional 750,000 to 1,300,000 bales of demand each year.

Currently, the United States imports about 36% of its peat requirements. Over the past four years, imports have increased their share of the market from 26% to their current level, and U.S. government sources expect that imports will continue to increase their penetration of the U.S. market.

EXHIBIT 25

RELATIVE SIZE OF MAJOR USER MARKET SEGMENTS IN THE UNITED STATES



SOURCE: CLCG Estimate for 1986

Currently, Canada supplies over 99% of the peat imported by the United States. This position has remained unchanged for the past five years and will continue into the foreseeable future.

Thus, the North American market for peat will remain in its current situation. The Canadian industry will rely on exports to the United States to support its production levels while the U.S.'s reliance on imports to meet increasing demand will continue to grow.

The major U.S. markets for peat are expected to remain along the Atlantic Seaboard and in North Central states. Together, these regions account for about 65% of the peat consumed in the United States. In these areas, peat competes effectively, on cost, with other soil amendments such as bark and mulches. The high cost is of shipping peat to the South Central and Western States from the peat producing regions in Canada and the United States will limit peat's penetration of these markets.

V. MAJOR USER SEGMENTS IN THE UNITED STATES

This section of the report examines the major end user market segments for peat moss in the United States. The market can be segmented into three major groups:

- home owners/gardeners,
- professional users, and
- soil mix producers.

Exhibit 25, opposite, illustrates the relative size of each market. The home owner market is the largest, accounting for about 16 million bales or 40% of peat moss consumption in the United States.

The professional user segment is only slightly smaller than the home owner sector. We estimate that this segment consumes about 15 million bales.

The third market segment comprises soil mix producers who currently consume about 7.5 million bales annually and account for 20% of the market. While this segment is the smallest, at about one-quarter the size of the other two, producers and distributors report that its growth rate is much higher than the others. We discuss each segment in detail in the next sections.

A. HOME OWNERS/GARDENERS

We estimate that retail customers (home owners/gardeners) account for about 40% of the peat moss purchases in the United States. During 1986, their purchases amounted to about 16 million bales (555,000 tonnes).

Consumers buy peat to improve soil for their landscaping and gardening activities. To gain insights into this market, we reviewed the National Gardening Survey, 1986-1987, published by the National Gardening Association, Inc., in April, 1987. We comment as follows:

- The amount spent by consumers on lawn and garden products increased in 1986. Retail sales totalled about $20 billion, an increase of $3 billion, or 18%, over 1985 retail sales of $17 billion.[1]

- However, the number of households which purchased soil amendments, including peat moss and mulches, declined by 2 million to about 15 million households (about 13% of households in the United States). Thus, it appears that the use of soil amendments, including peat, has declined despite increases in the gardening activities which use them.

NOTE: [1] All dollar figures are in Cdn$. US$ were converted at the rate of Cdn$1.40 = US$1.00

EXHIBIT 26

BREAKDOWN OF DOLLARS SPENT ON GARDENING ACTIVITIES WHICH USED SOIL AMENDMENTS/MULCH IN THE U.S. DURING 1986 BY SIZE OF PURCHASE
(Cdn.[1])

SIZE OF PURCHASE	PERCENTAGE OF HOUSEHOLDS
$ 0	1
$ 0 - 28	5
$ 28 - 68	9
$ 69 - 104	5
$105 - 138	10
$138 over	61
No answer	10
Mean $294	

SOURCE: National Gardening Survey 1986-1987

[1] $1.40 Cdn. = $1.00 U.S.

- The median amount spent on gardening activities which used soil amendments was $328.

- The amount spent on these activities per household in the United States varies from less than $28 to well over $140. Exhibit 26, opposite, provides a breakdown, by size of purchase. It shows that about 61% of households which purchase soil amendments spend over $140 on the gardening activity.

- The Atlantic region is the largest purchaser of soil amendments, with 23% of the households in this area buying the product. Exhibit 27, over, illustrates the percentage of households purchasing soil amendments, by region.

- Consumers purchase lawn and garden supplies, including soil amendments, from a variety of retail outlets:

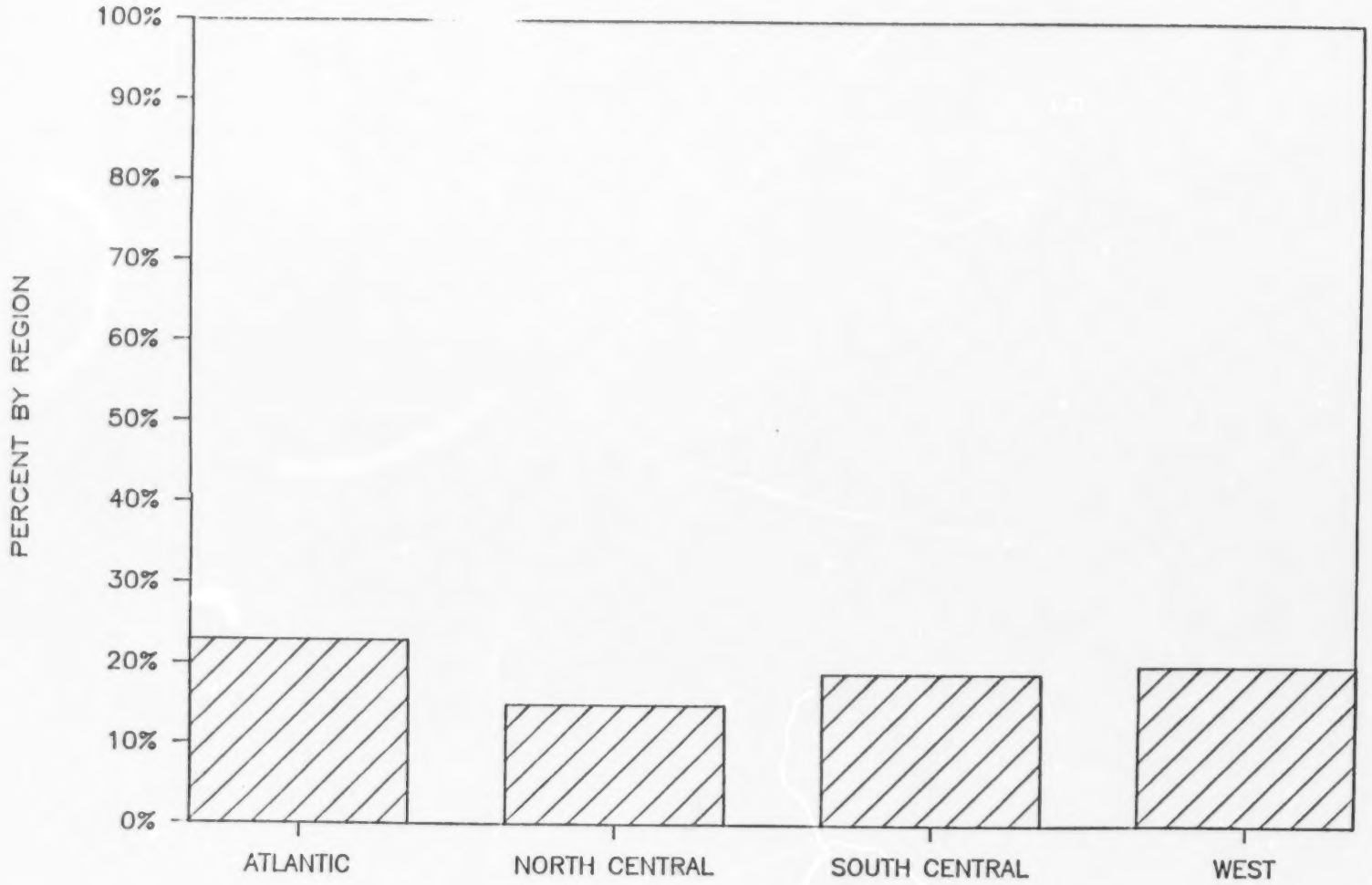
  - garden centre/nursery,
  - power equipment dealer,
  - hardware store,
  - home centre,
  - supermarket/drug store,
  - feed/seed store,
  - mass merchandiser, and
  - mail order.

The 1987-88 National Gardening Survey has not been published, but preliminary results indicate that about 14.2% or about 16 million households purchased peat moss in 1987. In the 1987-88 survey, peat moss was broken out for the first time.

The preliminary information also indicated that lawn care and landscaping were the main gardening activities which used peat. In addition, peat appears to be the primary soil amendment currently used by consumers.

EXHIBIT 27

PERCENTAGE OF UNITED STATES HOUSEHOLDS PURCHASING SOIL AMENDMENTS BY REGION



SOURCE: National Gardening Survey, 1986-1987

We examine purchases of soil amendments/mulches in more detail in the following sections.

1. The Use of Soil Amendments

Consumers use soil amendments in a wide variety of gardening activities, as discussed below.

a. Garden Activity

Exhibit 28, over, presents the percentage of households in the United States which participate in each type of gardening activity, the percentage of households, by activity, which purchase soil amendments, and the mean expenditure on gardening activities by each group.

The most popular gardening activities are lawn care, flower gardening, indoor houseplants, vegetable gardening, and shrub care. However, households which participate in these activities tend to be small users of soil amendments, with only about 22%, on average, purchasing the products.

b. Activities With a Higher Percentage of Participants Purchasing Soil Amendments

The major user groups of soil amendments are ornamental gardeners and herb gardeners; however, the median amount spent on these activities by these participants is low.

c. Large Median Expenditure Groups

Do-it-yourself landscapers make the largest median expenditure, $643, on gardening activities. The other groups with large mean expenditures are those in lawn care and tree care, at $319 and $206, respectively.

EXHIBIT 28

SUMMARY OF GARDENING ACTIVITIES AND PURCHASES

Garden Activity	% of Households Participating in Activity	(A) % of Participating Households which Purchase Soil Amendments	(B) Annual Mean Expenditure[2] (Cdn.)	(AxBx10) Relative[1] Size
Lawn Care	58%	19.5	$163	318
Flower Garden	44	24.0	64	154
Indoor Houseplants	41	22.1	53	117
Vegetables	38	21.3	43	92
Shrub Care	31	26.7	52	139
Tree Care	24	24.5	84	206
Flower Bulbs	24	27.5	36	99
Landscaping Do-It-Yourself	22	30.4	211	641
Fruit Trees	17	26.7	35	94
Raising Transplants	13	29.8	32	95
Container Gardening	12	28.5	42	120
Berries	8	28.7	29	83
Ornamental Gardening	6	42.9	31	33
Herb Gardening	6	36.9	17	63

SOURCE: National Gardening Survey, 1986-1987

1 Relative size was calculated by multiplying A and B by a factor of 10

2 $1.40 Cdn. = $1.00 U.S.

d. The Largest Users of Soil Amendments

To determine the garden activities which represent the largest markets for soil amendments, we combined the percentage of households which purchase peat with the mean dollar expenditures on gardening activities to obtain a relative size, (mean expenditure x 10 x % using soil amendments). Based on this analysis, the largest users of soil amendments are those engaged in the following activities:

- landscaping, with a 641 score,
- lawn care, with a 318 score,
- tree care, with a 206 score,
- flower gardening, with a 154 score, and
- shrub care, with a 139 score.

e. Consumer Knowledge of Peat

Industry sources state that generally speaking, the consumer is relatively uneducated in the use of peat moss for gardening. This factor is reflected in the national Gardening surveys which indicate that while over 78% of American households participate in gardening activities, only 14% use peat moss.

In addition, many consumers are not aware of the differences among the various types of peat. Industry sources report that of the consumers who buy peat, few differentiate between the various types of peat and many consumers shop on price when choices are available. Only the avid gardners are typically aware of the differences in peat and these are the people who request Canadian sphagnum peat. Unfortunately for Canadian producers, this

EXHIBIT 29

SOIL AMENDMENT PURCHASES AND TYPE OF
RETAIL OUTLET WHERE THE PRODUCT IS PURCHASED

TYPE OF OUTLET	PERCENTAGE PURCHASED
Garden Centre	26.6
Power Equipment Dealer	53.4
Hardware	24.9
Home Centre	33.3
Supermarket/Drug Store	22.0
Feed/Seed Store	27.1
Mass Merchandiser	28.5
Mail Order	36.2
Other	12.3

SOURCE: National Gardening Survey, 1986-1987

type of gardner represents a small portion of the gardners in the United States.

2. Packaging

Retail consumers tend to buy 2 cu. ft. and 4 cu. ft. packages almost exclusively. A small percentage of consumers buys 6 cu. ft. packages. The purchasers of 6 cu. ft. packages tend to be working on major projects or have large ornamental flower gardens.

Distributors report that their mass merchandise customers who typically order only 2 and 4 cu. ft. packages also sell a variety of nursery and garden supplies.

3. Distribution Channels

Exhibit 29, opposite, presents the types of retail outlets and the percentage of soil amendment purchasers who report buying products from each type of outlet. The total is well over 100%due to multiple answers, and a breakdown of sales volume by type of outlet cannot be made with the survey data.

Interviews with distributors indicate that about 55% to 60% of peat sales to consumers, by volume, go through nursery type outlets. Mass merchandisers, hardware stores and department stores account for the remaining 40% to 45%. The single largest retailer of peat moss in the United States is reported to be the K-Mart.

4. Pricing

Canadian sphagnum is the most expensive peat in the United States, due primarily to the cost of transportation from the bog to the market.

For example, in Florida, consumer sales of reed-sedge peat are higher than sphagnum because of the price savings. A 1.5 cubic foot bag of reed-sedge retails for about $2.75, while a two-cubic foot of Canadian sphagnum is priced at about $5.00. The consumer is not aware that the Canadian peat actually contains about $4ft^3$ of peat; he only sees a similar sized bag which costs about twice as much. For a large job, where a consumer buys in bulk, the price differential is more noticeable. A tonne of peat, FOB the bog in Florida, sells for as low as $5.60 which is much less than the $14.00 - $16.80 for a $6ft^3$ bale of Canadian sphagnum.

In the North Central Region, prices for reed-sedge peat in bulk average $11.90 per yd^3, FOB the bog. The peat packaged for consumer sales in 1.5 ft^3 bags, uncompressed, is sold to the retailers for $1.10 to $1.80 depending on the shipping cost.

In summary, consumers buy a mix of peat moss including sphagnum, reed-sedge, hypnum and humus. Industry representatives and distributors report that consumers are generally not aware of the benefits of using peat moss and do not typically differentiate among the various types.

B. PROFESSIONAL USERS

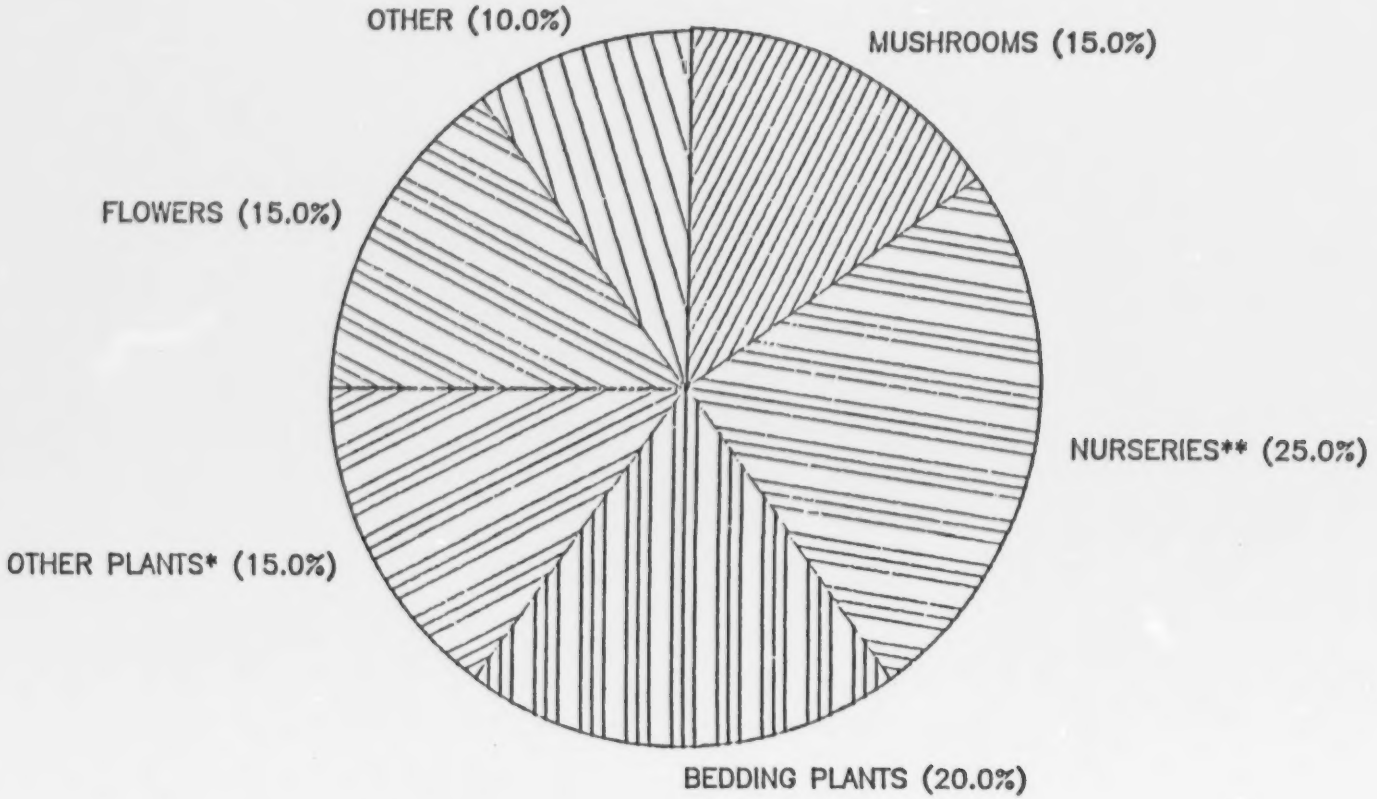
The professional users sector comprises the following groups:

- commercial nurseries/greenhouses for:
  - trees, and
  - shrubs.

- commercial growers for:
  - bedding plant growers,
  - flower growers, and
  - other plants, including foliage and flowering plants.

EXHIBIT 30

ESTIMATED CONSUMPTION OF PEAT BY MAJOR PROFESSIONAL END USER IN THE UNITED STATES (1986)



SOURCE: CLCG Estimate for 1986

- mushroom growers.

- others such as:
  - landscaping firms,
  - golf courses, and
  - vegetable growers.

Exhibit 30, opposite, illustrates the relative size of the various segments. We have broken down consumption for the important sectors of the commercial growers segment. We discuss each major market segment below.

1. Commercial Nurseries

The largest sector in the professional market segment comprises commercial nurseries, which account for about 25% (3.8 million bales) of the peat moss consumed by professional users. This industry consists of nursery crop growers, landscape firms, landscape maintenance operations, retail nursery or garden centres, agency distributor operations, mail order businesses, and specialty nursery operations.

a. Industry Structure

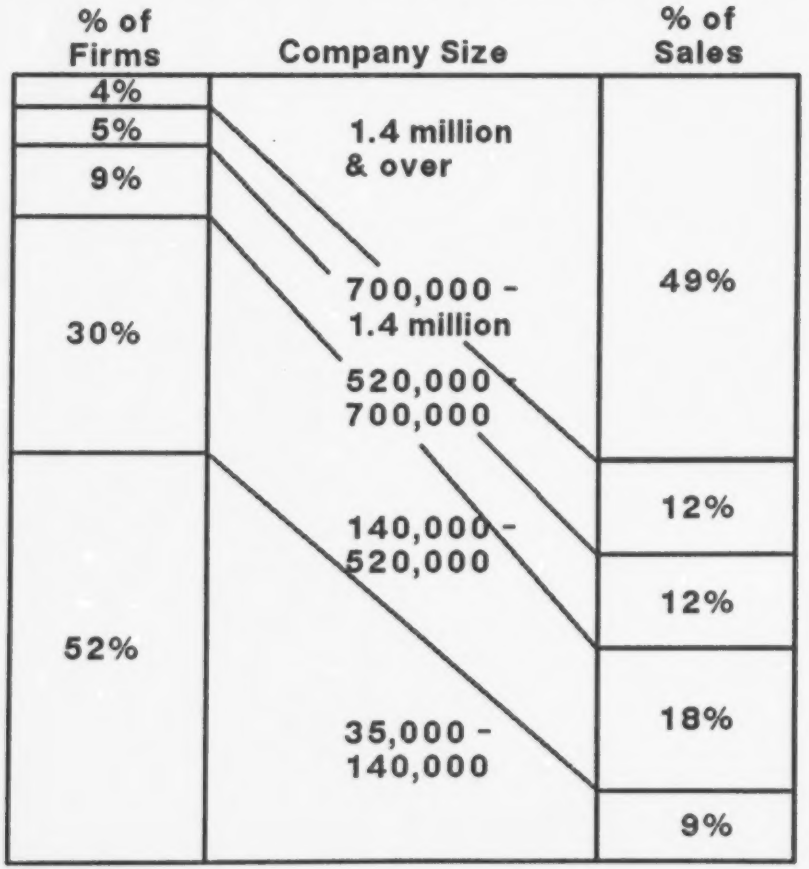
A nursery may specialize in wholesale growing or may be active in several segments of the business, such as retail sales, wholesale growing and landscape operations. The nursery industry includes a wide variety of company sizes, from multi-million dollar industry leaders to part-time or seasonal family avocations.

Scope IV of the Nursery Industry, a study involving the firms comprising the wholesale grower portion of the nursery industry in the United States, and copyrighted in 1982 by the Horticultural Research Institute, Inc.,

EXHIBIT 31

BREAKDOWN OF UNITED STATES INDUSTRY SALES AND NUMBER OF FIRMS BY COMPANY SIZE

NATIONAL WHOLESALE INDUSTRY



SOURCE: "Scope IV of the Nursery Industry," for 1980

provides the following information on firms in the industry during 1980. (Please note that the 1985 update should be available in late 1987.)

- The report estimated that the wholesale grower portion of the nursery industry had over 5,000 firms, with an annual sales volume of about $2.1 billion. Exhibit 31, opposite, shows the number of firms and estimated total sales, by company size.

- The highest proportions of total sales are accounted for by the $1.4 million and over sales size, with an estimated 185 firms having a total sales volume of just over $1 billion.

- Those in the $140,000 to $520,000 group also contribute significantly to total sales, with 1,500 firms having a total sales volume of $374 million.

Professional/wholesale growers may produce a wide variety of products or specialize in growing only one or two types of crops. The average operation produces three to four different types of crops. The smaller firms tend to concentrate on three types of crops - shade and flowering trees, broad-leafed evergreens, and conifers. Exhibit 32, over, lists the type of crops, the percentage of farms which produce it and the percentage of sales each type of crop represents. The number of farms producing the types of plants that mature quickly is under 20% for each type.

b. Use of Peat Moss

Our interviews with distributors indicated that the major users of peat moss are the firms which grow foliage,

EXHIBIT 32

SUMMARY OF CROP SALES BY SIZE OF FIRM IN THE UNITED STATES

PERCENT OF FIRMS AND PERCENT OF SALES BY TYPE OF CROP PRODUCED

Type of Crop	$ 35,000-140,000		$140,000-520,000		$520,000-700,000		$700,000-1.4 million		$1.4 million & over	
	% of Firms	% of Sales	% of Firms	% of Sales	% of Firms	% of Sales	% of Firms	% of Sales	% of Firms	% of Sales
Shade & Flowering Trees	55%	21%	64%	23%	70%	21%	62%	24%	73%	18%
Broad-leafed Evergreens	55	21	65	22	66	20	52	15	67	19
Conifers	53	17	57	19	63	20	57	17	74	19
Deciduous Shrubs	35	6	52	7	60	10	52	9	65	9
Groundcovers & Vines	31	9	36	5	39	6	43	9	45	3
Foliage & House Plants	19	9	16	8	11	6	12	6	22	7
Fruit Trees	16	2	20	4	24	6	26	4	38	10
Specialties (Bonsai, etc.)	12	2	5	*	9	1	6	*	17	1
Roses	7	1	9	1	8	1	6	*	17	3
Annuals & Bedding Plants	10	2	16	4	6	1	17	6	11	2
Perennials	12	2	13	1	15	4	12	1	15	2
Bulbs, Corms, Tubers	1	1	2	*	2	*	5	*	5	2
Other	16	7	12	6	10	4	14	9	20	6

*Less than 1%

SOURCE: "Scope IV of the Nursery Industry", for 1980

houseplants, annuals, and other plants which mature quickly. They report that the growers can see the beneficial results of peat moss easily in plants that grow rapidly and mature in less than 100 days.

The use of bark is more predominant in growing mediums for larger, slower growing plants such as trees, shrubs and bushes. Bark-based mediums provide good results in these applications at a much lower cost than does peat moss. Although peat moss may deliver better results, its higher cost and the inability of growers to see the improved results quickly have kept peat from establishing a wide use in these applications. For example, one rose grower reports that he saves about $1,400 per month since substituting a bark mulch for peat moss, with no noticeable difference in the quality and quantity of roses grown.

Nurseries use a wide variety of supplies. Exhibit 33, over, lists the supplies purchased. Containers account for the highest proportion of total dollars spent on these supplies, although purchased by only about 7.7% of the firms.

Peat moss ranks sixth, with 61% of firms purchasing. The estimated nationwide expenditure on peat moss by nurseries for internal use during 1980 was about $16.1 million.

Exhibit 34, over, provides the following additional information on peat moss purchases by nurseries:

- the percentage of firms purchasing, by size, and the percentage of total supply expenditures, by product, and

EXHIBIT 33

SUMMARY OF SUPPLIES PURCHASED BY NURSERIES (1980)
(Cdn.)

SUPPLIES PURCHASED — ALL FIRMS

	% of Firms	% of Total Supplies	Estimated Nationwide Expenditure
Containers	77%	37%	$92,152,000
Fertilizer	96%	12%	$34,184,000
Bark Products	55%	8%	$19,562,000
Packaging Materials	41%	7%	$13,553,000
Herbicides	86%	7%	$17,904,000
Peat Moss	61%	6%	$16,042,000
Burlap	56%	6%	$18,634,000
Shipping Cartons	30%	5%	$ 9,186,000
Winter Plant Protection	65%	3%	$10,215,000
Insecticides	87%	3%	$ 9,482,000
Other Container Amendments	47%	2%	$ 8,922,000
Wire Baskets	22%	2%	$ 5,353,000
Stakes	41%	1%	$ 3,662,000
Fungicides	71%	1%	$ 3,564,000

SOURCE: "Scope IV of the Nursery Industry", for 1980.

EXHIBIT 34

PEAT MOSS PURCHASES BY NURSERIES AS COMPARED TO PURCHASES OF OTHER SUPPLIES

SUPPLIES PURCHASED
PER CENT OF FIRMS AND PER CENT OF TOTAL SUPPLIES

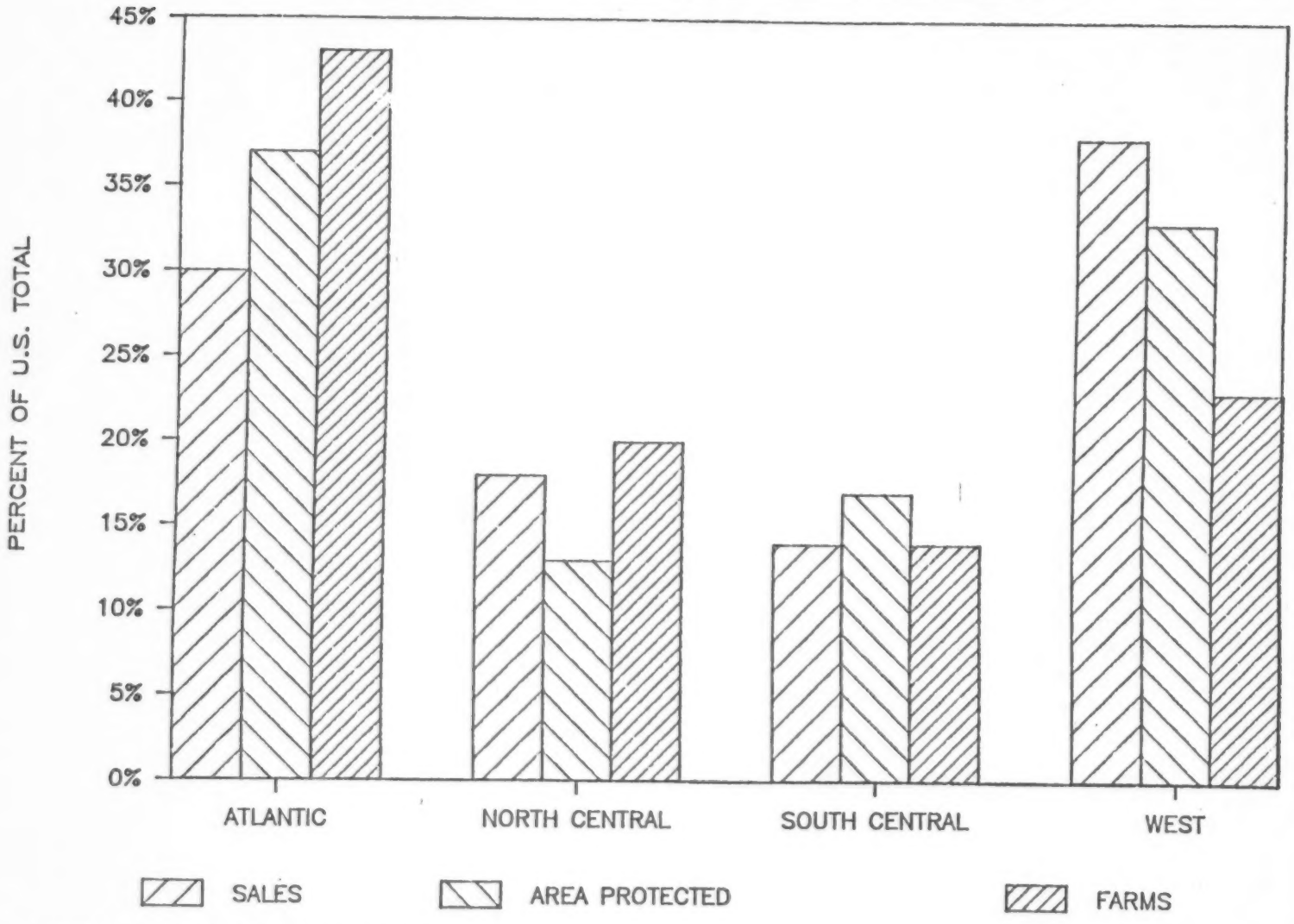
Type of Supplies	$35,000-140,000		$140,000 - 520,000		$520,000 - 700,000		$700,000 - 1.4 million		$1.4 million and over	
	% of Firms	% of Supplies	% of Firms	% of Supplies	% of Firms	% of Supplies	% of Firms	% of Supplies	% of Firms	% of Supplies
Containers	76	33	81	33	72	33	68	28	84	39
Fertilizer	98	13	96	15	97	13	96	15	94	12
Herbicides	83	8	90	6	86	5	86	7	86	7
Insecticides	90	4	90	5	89	5	77	3	83	3
Fungicides	71	2	69	2	71	2	70	1	69	1
Bark Products	50	8	53	7	50	6	54	7	65	8
Peat Moss	62	8	61	5	66	6	49	6	64	6
Other Soil Amendments	47	5	49	5	43	5	40	4	53	2
Burlap	52	7	59	9	53	11	61	12	55	4
Winter Plant Protection	58	6	69	4	68	5	60	3	69	3
Packaging Materials	21	1	27	4	37	2	89	2	54	8
Shipping Cartons	17	1	22	2	30	3	33	2	57	5
Wire Baskets	16	2	20	2	20	2	33	8	25	1
Stakes	30	2	36	1	49	2	25	2	52	1
AVERAGE ANNUAL EXPENDITURE Total Supplies *	$13,972		$32,718		$63,602		$93,800		$665,672	

* Total not equal to sum of parts due to rounding.

SOURCE: "Scope IV of the Nursery Industry", for 1980

EXHIBIT 35

KEY STATISTICS FOR THE UNITED STATES NURSERY INDUSTRY (1982)



SOURCE: U.S. Census Bureau, 1982

- the average annual expenditure, by size of firm, for each product.

As shown in Exhibit 34, about 60% to 65% of the firms in each size category purchase peat moss, with the exception of the $700,000 to $1.4 million category (with 54% of the firms). The average annual expenditure for peat moss ranged from $1,252 (firms with sales from $35,000 to $140,000) to $38,960 for firms with annual sales of $1.4 million and over.

c. Geographic Distribution of the Nursery Industry

In addition to Scope IV, we reviewed nursery and greenhouse statistics published by the U.S. Census Bureau. The document reviewed was the 1982 Census of Agriculture which included specific information on products. Although the data are for 1982, the report provides useful information. However, the study does not indicate the volume of peat moss purchased, nor can we estimate it. The Census of Agriculture is completed every five years and the 1987 data should be available in late 1987.

The definition of firms and breakdown by crops produced used by the Census Bureau and the Horticultural Research Institute vary, and therefore, do not allow for direct comparison of the data bases. However, the Census Bureau data can be used to examine the location and major concentration of nursery users of peat moss.

Exhibit 35, opposite, provides a geographical breakdown of the number of farms and square feet under protection for the producers of nursery products. We comment as follows.

- The Atlantic Region has the highest percentage of farms and protected areas*, with 43% and 37% of the U.S. totals, respectively. However, the region has only 30% of the sales. The key producing states, in order of importance by sales, are:

  - Florida,
  - Pennsylvania,
  - New Jersey,
  - New York,
  - Connecticut,
  - North Carolina, and
  - Virginia.

- The Western Region is the second largest region, with 23% of the farms and 33% of the area under protection, indicating that the farms are among the largest in the country. The region also accounts for the largest volume of sales, about 39% of the U.S. total. California dominates the Western Region and is the largest producing state in the United States, with 28% of the sales and 31% of the total protected area in the United States. Washington and Oregon are also relatively important producing states for nursery products in the Western Region.

- The North Central Region is a relatively small region, with 20% of the farms and 18% of the sales, and only 13% of the protected area in the United States. The major producing states, in order of importance by sales, are:

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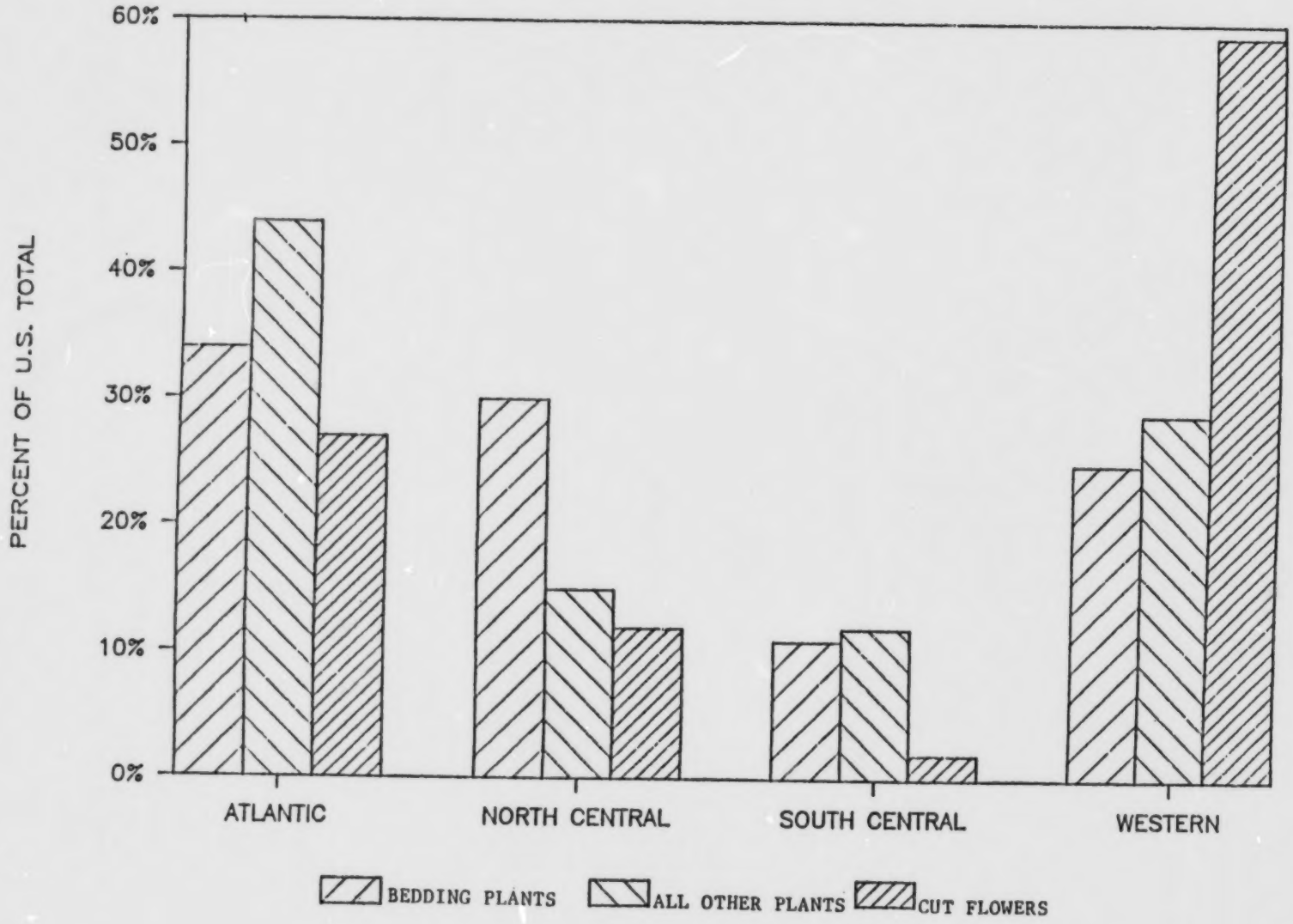
* Protected areas refer to greenhouses or areas which are protected from the elements.

EXHIBIT 36

DISTRIBUTION OF NURSERY INDUSTRY SALES IN THE UNITED STATES BY REGION (1982)



SOURCE: U.S. Census Bureau, 1982

- Michigan,
- Illinois, and
- Ohio.

- The South Central Region has only 14% of the farms, but has 8% of the sales and 17% of the area under protection. The major producing states, in order of importance, are:

  - Texas,
  - Tennessee,
  - Oklahoma, and
  - Alabama.

In summary, nurseries represent an important segment of the peat market. They are large consumers of peat moss for their own use and, as discussed, in the previous section, the nurseries which operate retail facilities are a key sales outlet for the consumer market. The nursery industry is spread across the United States, but the key producing states are located in the Atlantic and Western Regions.

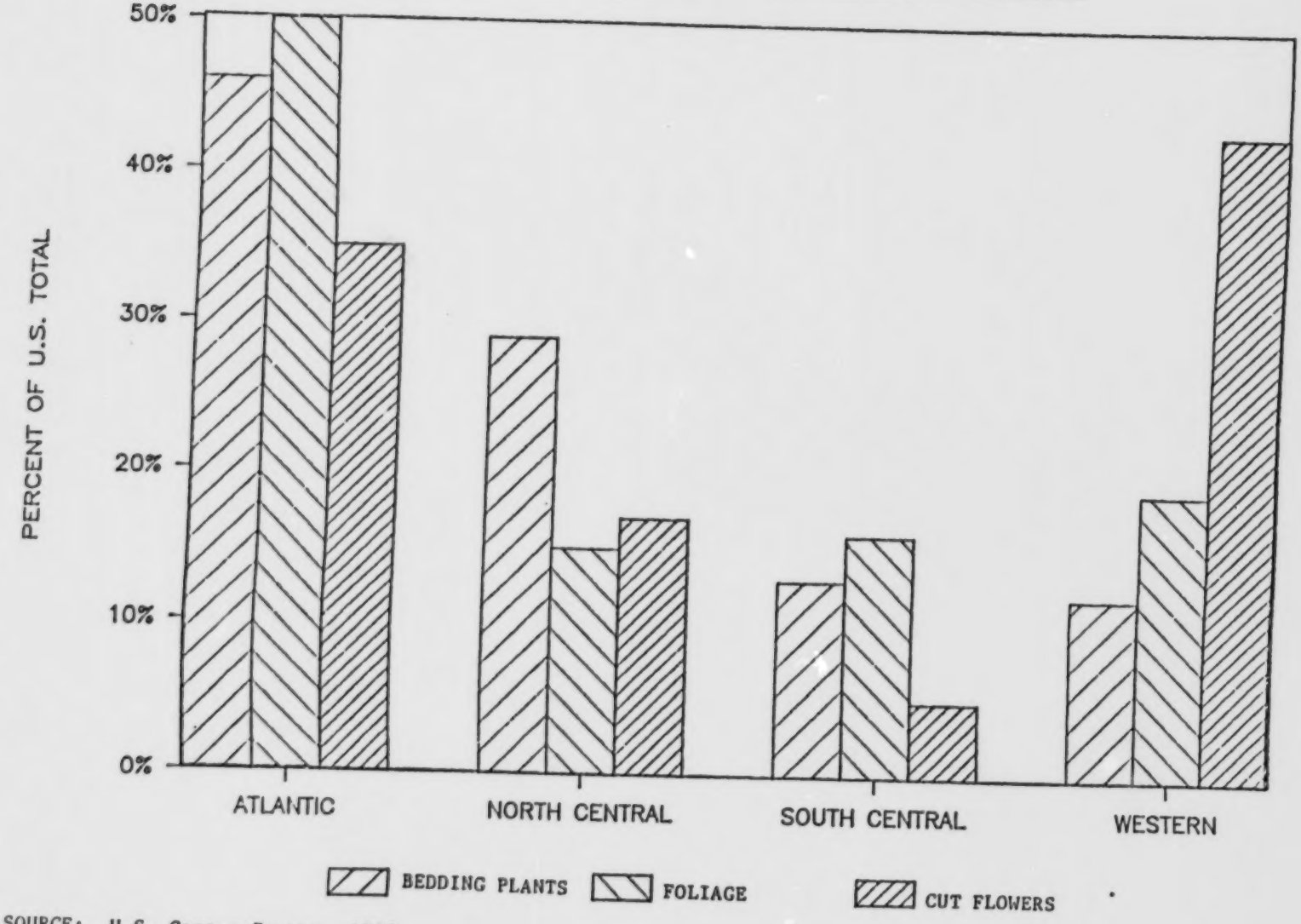
2. Commercial Growers

The Census material also provides a breakdown for three of the crops which distributors identified as important peat users: bedding plants, cut flowers and florist greens, and foliage and flowering plants. Exhibit 36, opposite, and Exhibits 37 and 38, over, illustrate the relative size of each industry, by region. We comment as follows:

- Bedding plants are grown primarily in the Atlantic and North Central Regions. Together, they account for 64% of sales, 75% of the farms, and 71% of the area under protection. The following seven states accounted for 49%

EXHIBIT 37

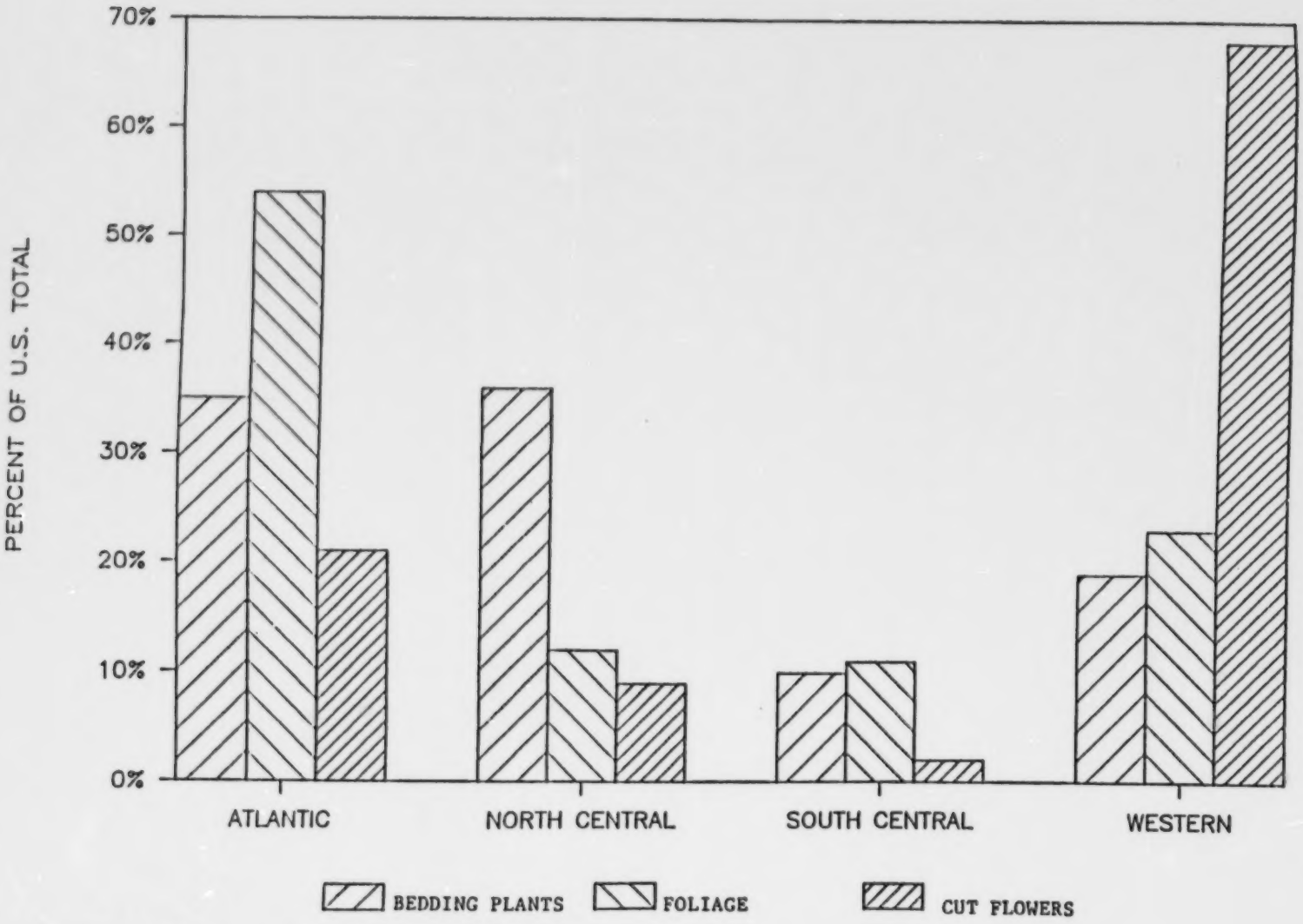
DISTRIBUTION OF NURSERY FARMS IN THE UNITED STATES BY REGION (1982)



SOURCE: U.S. Census Bureau, 1982

EXHIBIT 38

DISTRIBUTION OF PROTECTED AREA IN NURSERIES IN THE UNITED STATES BY REGION (1982)



SOURCE: U.S. Census Bureau, 1982

of the U.S. production, as measured by grower sales in 1982:

- California,
- Michigan,
- Ohio,
- Texas,
- New York,
- Pennsylvania, and
- Florida.

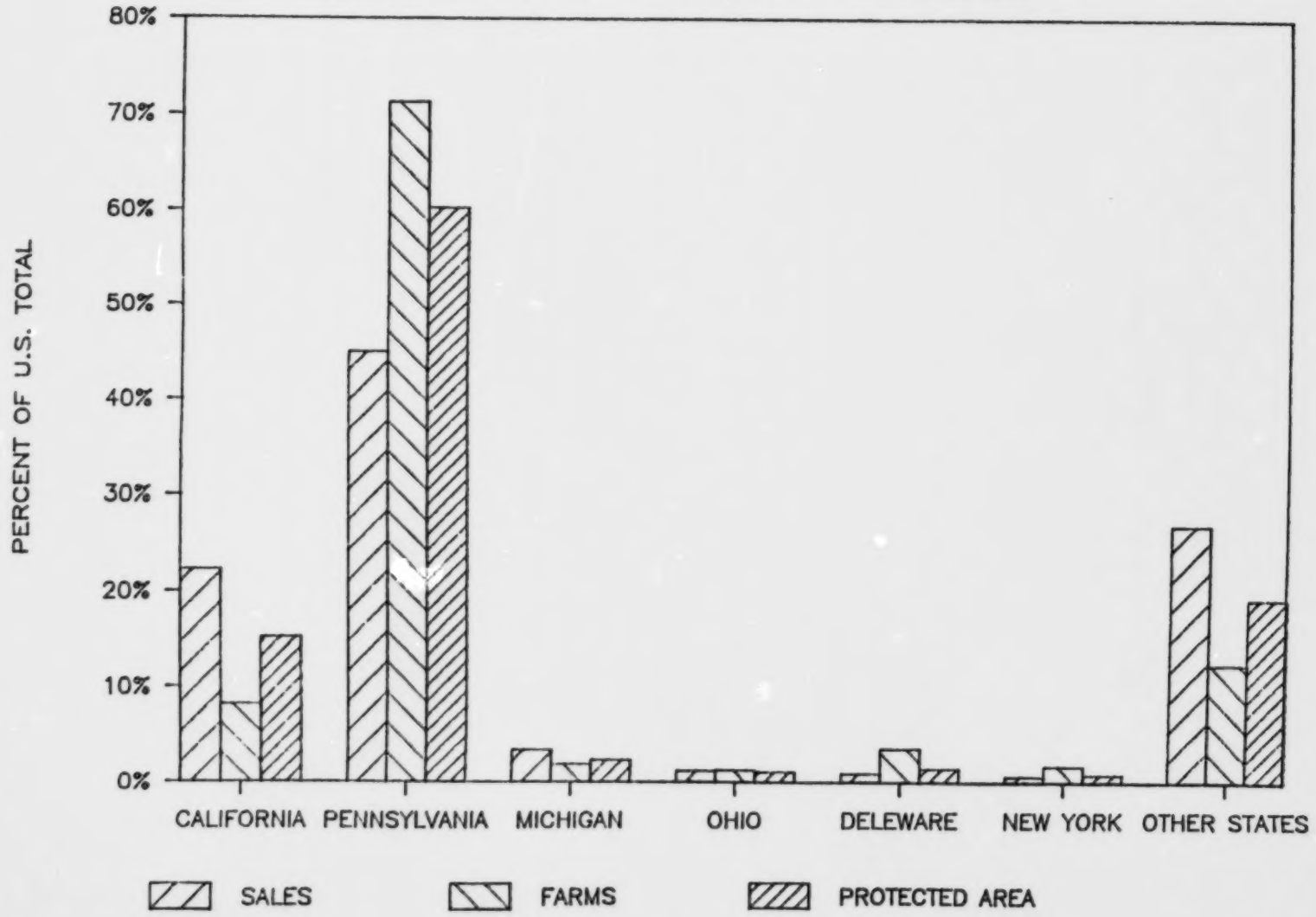
- Foliage and flowering plants are grown primarily in the Atlantic region, which accounts for 44% of grower sales, 50% of the farms and 54% of the protected area. The following ten states accounted for about 74% of grower sales in 1982:

  - Florida,
  - California,
  - Texas,
  - Ohio,
  - New York,
  - Pennsylvania,
  - New Jersey,
  - Michigan,
  - North Carolina, and
  - Illinois.

- The West, led by California, is the leading region for production of cut flowers and florist greens. The region accounts for 59% of grower sales, 43% of the farms and 68% of the area under protection. The following eight states represented about 80% of grower sales in the United States for cut flowers and cut florist greens in 1982.

EXHIBIT 39

STATISTICS ON UNITED STATES MUSHROOM GROWERS BY STATE (1982)



SOURCE: U.S. Census Bureau, 1982

- California,
- Florida,
- Colorado,
- Pennsylvania,
- Hawaii,
- Ohio,
- New York, and
- Indiana.

3. Mushrooms

Mushroom growers represent a large and continuing market for peat moss. Based on industry statistics and conversations with peat distributors, we estimate that mushroom growers consume about 2.3 million bales of peat moss per year.

Each farm typically grows three or four crops of mushrooms per year. Each time a crop is started, a new compost must be put into the building before introducing the mushroom spawn. Peat is one component of the compost and, thus, every time the farmer starts a new crop of mushrooms, he requires a shipment of peat.

The mushroom industry in the United States is concentrated in two states, Pennsylvania and California. Between them, they account for 67% of mushroom sales, 76% of the area under protection, and 80% of the mushroom farms in the United States. Exhibit 39, opposite, summarizes the industry statistics.

4. Other Uses

There are a number of minor uses for horticultural peat which, in total, consume about 1.5 million bales annually. These include the following:

- golf courses under construction,

- vegetable growing,
- bedding for horses in stables,
- oil sorbents, and
- earthworm culture medium.

Each of the above uses accounts for a very limited peat consumption, as follows:

- Golf courses under construction consume peat moss for soil improvement, particularly for constructing greens. The volume consumed varies widely, depending on the availability of peat at a reasonable cost and the level of course construction.

- Vegetable growers sometimes use small amounts of peat. However, they typically do not use a substrate system to grow their products. Distributors report that soil mix sales to this industry are growing and this tends to limit the sales of raw peat moss to vegetable growers. However, the net effect is to increase the growers' use of peat as the soil mix contains peat which would not have been purchased by the growers.

- Bedding for horse stables is a small use where peat moss competes directly against straw. Stable owners consider peat a better product, but price becomes an issue, particularly in areas where low cost straw is available.

- Oil sorbents represent a very small use and the peat requires a special production process to dry and mill it to the desired moisture content and consistency.

- Sales of peat moss as an earthworm cultural medium are under 29 bales annually, according to the U.S. Bureau of Mines.

In summary, the professional users are a key market segment for peat in the United States, accounting for 35% to 45% of consumption. The segment comprises several sectors including nurseries, commercial growers, mushroom farmers and miscellaneous users.

Commercial growers buy a mixture of peat, including reed-sedge, sphagnum, humus, and hypnum. These buyers are typically well informed and knowledgeable about peat products as well as the potential to substitute other products such as bark and mulches. Thus, while sphagnum has unique characteristics, the level of importance placed on these features by the commercial growers will vary, depending upon peat's specific application in their operations.

C. "VALUE ADDED" PRODUCTS

The amount of peat consumed by "value added" products, such as soil mixes, is increasing as the demand for these products increases. Distributors estimate that demand for these products is growing at 10% to 15% annually. We estimate that this market segment consumes about 20% of the peat moss produced in Canada, or about (260,000 tonnes) 7.5 million bales. Products produced by this segment include soil mixes and peat pots. We estimate that soil mixes account for over 90% of the peat moss consumed by value-added products. Therefore, the remainder of this section deals with soil mixes.

1. The Soil Mix Market

Soil mix producers may be categorized according to the scope of their operations. In one group are the large operators who produce and promote a line of soil mixes to the general market. The second group comprises commercial nurseries who produce mixes for internal use and local customers.

Although statistics are unavailable on this particular industry, based on our interview program, we estimate that the large operations account for over 60% of the peat moss consumed by soil mix producers.

The large scale soil mix producers we interviewed tend to carry a line of soil mixes to meet the varied needs of growers. These mixes are formulated to meet the requirements of different plants as well as different stages in their growing cycles. The large operations market up to 15 different mixes, plus custom mixes which are formulated specifically for large individual customers.

The mixes contain from 0 to 90% peat moss, by volume. Peat and bark typically form the base products for a mix. To these bases, operators add such products as:

- sand,
- limestone,
- sulphate,
- potassium nitrate,
- vermiculite,
- borax,
- superphosphate, and
- perlite.

The final mixture is tailored to specific uses and the plants being grown.

Based on our interviews, it appears that local nurseries are declining as a market for peat used in soil mixes. Two respondents reported that local nurseries could not produce soil mixes as inexpensively as they could buy them now. Rising labour costs and capital costs of mixing equipment have caused

small nurseries to curtail production of soil mixes and buy from the larger operators.

2. Characteristics of the Soil Mix Industry

Other characteristics of the soil mix industry are as follows:

- Operators tend to locate their plants close to end-use markets. Peat and other raw materials are shipped to the plant.

- Many large soil mix producers are also peat producers, for example:

  - Colby has a mixing plant in Iowa and produces peat in Michigan as well as importing from Canada,

  - Fafard companies operate mixing plants in both Canada and the United States,

  - Southern Importers operates a bog in New Brunswick and operates mixing plants in the United States, and

  - Fisons-Western operates mixing plants in both Canada and the United States.

- Other companies, such as W.R. Grace, are large producers of soil mixes, but do not operate peat bogs.

- Soil mix producers report that customer service is a key selling feature. If a customer's needs are not fully understood and the wrong mix applied, the results can injure the crops being cultivated, with lawsuits brought against the soil mix producers.

- o Liability insurance is a major cost to soil mix producers. One respondent stated that obtaining the insurance is becoming more difficult.

The soil mix market is growing, and existing producers are best positioned to take advantage of this growth. They typically have excess capacity and are established and reliable suppliers. New entrants will face high liability insurance and capital equipment costs. In addition, they will have trouble competing with existing producers who are well established.

D. SUMMARY

In summary, the United States market for horticultural peat is large, but growing relatively slowly, with annual growth projected at under 3.5%.

The consumer segment is decreasing its purchases of soil amendments (National Gardening survey). In addition, penetration of the consumer market segment is low, with about 14% of U.S. households which engage in gardening activities purchasing peat moss. An opportunity may exist to increase peat penetration of the consumer market. However, it will require a large promotional campaign to increase consumer awareness of the benefits of using peat in home gardening applications and the differences among the various types of peat.

The professional market for raw peat is saturated as growers increase their use of soil mixes. This segment is price conscious and peat competes with soil mixes and other mulches. Peat produces the best results for crops that mature quickly and appears to be used heavily for these applications. Growers will use the lowest cost growing medium available for other applications where the benefits of peat are less noticeable.

The soil mix market is growing rapidly, at a rate estimated by distributors to be in the 10% to 15% range annually. Soil mixes require careful production procedures to ensure consistent quality. In addition, customers expect strong technical support from producers, and liability insurance is expensive. The outlook for these products is very favourable; however, many North American producers have excess capacity at present. Therefore, it seems thatthese existing producers of soil mixes will benefit from the growth while producers who are not currently supplying soil mixes will find it difficult to enter the market.

VI. PROFILE OF SELECTED INTERNATIONAL MARKETS

The purpose of this chapter is to identify and present brief profiles of overseas markets which warrant additional investigation as potential business opportunities for New Brunswick producers. Selected overseas markets were to be Japan, China, Morocco, Egypt, South Africa, Algeria, Saudi Arabia, Israel, Australia and New Zealand.

Our initial approach to screening countries to identify opportunities was based on United Nations trade data. World peat import and export trade statistics from the United Nations data base for STIC Code 3224 were analyzed to establish a list of countries worthy of further investigation. The code covers "peat compressed in bales, crushed, dried, pulverized/not pulverized and litter." It does not include peat articles, peat ash, peat fibre, peat yarn, etc., which typically are used in non-horticultural applications.

Our analysis first developed a world trade matrix for peat moss, based upon import statistics for the five-year period 1981 to 1985, inclusive. To ensure the completeness of these numbers, we then developed an export trade matrix for the eight largest exporting countries. These countries, West Germany, Canada, Ireland, the Netherlands, Finland, Sweden, Austria and Belgium, export over 99% of the peat moss traded in the western world.

EXHIBIT 40

MAJOR IMPORTERS OF PEAT WORLDWIDE
(Bales)

Country	1981 (000)	1985 (000)	Average Annual Growth Rate (%)	Annual Average Number of Bales Added 1981 to 1985
Netherlands	10,247	15,041	10.07	1,198,400
United States	8,995	12,559	8.70	890,938
France	3,298	9,314	29.63	1,504,050
United Kingdom	3,830	5,639	10.15	452,300
Belgium	4,042	4,053	0.07	2,640
Italy	1,490	3,980	27.84	622,398
West Germany	1,603	2,977	16.74	343,500
Switzerland	1,974	1,796	(2.33)	-
Austria	1,882	1,697	(2.56)	-
Spain	462	1,313	29.85	212,740
Japan	345	916	10.81	48,920
Sweden	1,307	719	(13.87)	-
Denmark	632	714	3.11	20,500
Saudi Arabia[1]	240	587	25.03	86,710
Norway	425	519	5.16	23,635
Greece	107	295	28.80	47,070
Morocco[1]	83	202	24.90	29,780
Australia[1]	118	196	2.42	4,470
Egypt[1]	218	123	(13.47)	-
Portugal	31	85	28.78	13,630
Israel[1]	26	84	36.11	14,935
Jordan[1]	3	43	83.80	9,890
Finland	145	8	(51.85)	-

SOURCE: United Nations Trade Statistics, 1985

( ) Indicates decline

1 Assembled from export data, as import statistics were considered not as reliable.

When the import statistics were compared to the export statistics, several discrepancies were noted for smaller, less developed countries such as Jordan. In these cases, we used the data from the exporting countries which are more developed, and typically maintain better trade statistics than do the less developed countries.

Exhibit 40, opposite, summarizes the results of this analysis. To determine which countries represented opportunities, we applied the following criteria:

- a minimum level of imports of 60,000 bales,
- an average growth rate over the past five years of 10%, and
- a 40,000 bale annual average increase on peat moss imports for the past four years.

Applying the above criteria showed the following areas to have potential:

- United States
- Western Europe
  - France,
  - West Germany,
  - Italy,
  - the Netherlands,
  - United Kingdom,
  - Greece, and
  - Spain.
- Middle East
  - Saudi Arabia

EXHIBIT 41

AREAS ND COUNTRIES EXAMINED

WESTERN EUROPE	MIDDLE EAST
- the Netherlands	- Egypt
- France	- Israel
- United Kingdom	- Jordan
- Belgium/Luxembourg	- Morocco
- Italy	- Saudi Arabia
- West Germany	
- Switzerland	PACIFIC RIM
- Austria	- Japan
- Sweden	- Australia
- Denmark	
- Greece	
- Spain	
- Portugal	

- Pacific Rim
  - Japan

To complete our analysis of potential opportunities for New Brunswick peat, we further divided the above areas and added additional countries that met one or two, but not all three, of the economic criteria, Exhibit 41, opposite, provides a final breakdown of the areas and the countries chosen for further investigation. The United States market has already been discussed in earlier chapters of this report.

The Western European market is discussed below, followed by profiles of selected markets in the Middle East and Pacific Rim countries.

A. WESTERN EUROPE

We have treated the countries of Western Europe as one market because they are members of the European Economic Community (EEC), and there is a great deal of inter-country trading. Most of these countries have strong economic ties with each other for many goods and services. Under the protection of the EEC, member countries can export their products duty free while non-members, such as Canada, are subject to tariffs. Below, we discuss the established EEC members. Later in this chapter, we examine France, Greece, Spain and Portugal individually.

France is the second largest importer of peat in Europe, second only to the Netherlands. However, unlike the Netherlands, which exports about half as much peat as it imports, France's exports of peat are less than 1% of its imports. This suggests that France is a large user of peat and imports most of its requirements. In addition, Greece, Spain and Portugal are new members of the EEC and are not fully integrated into the Community. Therefore, these four markets offer better potential for non-EEC countries.

EXHIBIT 42

DISTRIBUTION OF PEAT IMPORTS BY MAJOR EUROPEAN MARKETS, 1985
(%)

IMPORTERS	EXPORTERS								
	West Germany	Netherlands	Ireland	Finland	Sweden	Austria	Belg/Lux	USSR	Other
Netherlands	91.3	-	0.4	4.8	0.5		0.3	1.6	1.1
France	54.2	29.1	3.2				5.8	6.0	1.7
United Kingdom	0.7	0.9	89.5	1.6	0.5			6.3	0.5
Belgium/ Luxembourg	24.4	64.8					-	10.2	0.6
Italy	65.5	5.8				7.3		16.5	4.9
West Germany	-	58.7				1.3		37.3	2.7
Switzerland	89.3							5.8	1.3
Austria	72.5					-		14.9	12.6
Sweden				87.5	-			7.7	4.8
Denmark	21.2			9.9	41.3			25.8	1.8

SOURCE: United Nations Trade Statistics, 1985

1. Established EEC Members

a. Level of Peat Moss Imports

The level of peat moss imports, by country, in Europe is difficult to ascertain because of the large volumes of intra-European trade in peat.

To illustrate the significance of intra-European trade flows for peat, Exhibits 42 and 43 were prepared. Exhibit 42, opposite, shows the distribution of import share in the ten major European markets. Exhibit 43, over, shows the distribution of peat exports for each major producer. In both exhibits, the countries are listed, in descending order of magnitude - left to right, and top to bottom. These exhibits clearly show the high degree of inter-dependence between the European countries. In many cases, the largest exporters are also included as the most significant importers. For example, in 1985, West Germany exported over 13 million bales of peat to the Netherlands and imported about 1.7 million bales of peat from the Netherlands.

The size of this market is reflected in the following analysis. Six countries, Belgium, France, West Germany, Italy, the Netherlands and United Kingdom, collectively, imported over 41 million bales of peat in 1985, over three times more than the 12.5 million bales imported by the United States. The above countries are industrialized and have some of the highest standards of living in the world as shown in their per capita GNP. The per capita GNP for the countries is as follows: Belgium ($10,790), France ($14,379), West Germany ($14,210), Italy ($9,990), the Netherlands ($11,953) and the United Kingdom ($10,545).

EXHIBIT 43

DISTRIBUTION OF PEAT EXPORTS BY MAJOR EUROPEAN MARKETS, 1985
(%)

EXPORTERS	IMPORTERS										
	Netherlands	France	United Kingdom	Belg/Lux	Italy	West Germany	Switzerland	Austria	Sweden	Denmark	Other
West Germany	44.4	16.3	0.1	3.2	8.4	-	5.2	4.0		0.5	17.9
Netherlands	-	33.2	0.6	32.1	2.3	21.4	0.2	0.1		0.1	10.0
Ireland	1.0	4.7	80.3					0.3	39.4	4.4	3.4
Finland	45.5	0.7	5.5	0.4	0.4			0.3	39.4	4.4	3.4
Sweden	6.5	0.7	2.9			0.4				27.7	61.8
Austria	14.0				80.4		1.8				3.8
Belgium/ Luxembourg	14.7	84.7			0.2						0.4

SOURCE: United Nations Trade Statistics, 1985

b. Major Uses for Peat Moss

In Europe, peat moss is used for both horticultural purposes and as a fuel source. Not reflected in the above trade statistics is peat which is used for fuel purposes, as our analysis examined horticultural uses only. In addition to peat moss sold to the professional growers, households and soil mix producers, European producers appear to market more value-added products to the consumer market.

c. Constraints

The opportunities for New Brunswick peat producers in European markets are limited. Any North American producer will be faced with a high degree of competition from local established suppliers. The following represent the major constraints to entering the major European country markets:

- As members of the EEC, these countries have a direct advantage as preferred trading partners.

- According to industry sources, the major European peat producer, West Germany, has sufficient peat reserves to meet demand for over 25 years.

- The distance between the importers and exporters is negligible in Europe, while New Brunswick suppliers would have to face trans-Atlantic shipping costs. For example, shipping costs for one container from Saint John, New Brunswick, to Le Havre, France, are about $2,800 or approximately $7.50 per bale, based on 373 bales per container. Delivery within France

incurs further charges and are comparable to the transportation costs paid by West German producers.

- Most European markets are well served by established suppliers. Therefore, New Brunswick producers will have to compete directly against European suppliers for market share and will have no significant competitive advantage.

However, the longer-term opportunities in Europe appear to be more favourable. The European peat producers are coming under increasing pressure from environmental groups to reduce production. As reserves decline, the producers will find opening new bogs more difficult.

Hence, as the European market continues to grow and its producers come under increasing pressure to reduce production, opportunities may become available for Canadian peat producers in Europe.

2. France

a. Background

France is second in size to the U.S.S.R. among Europe's nations and is an original member of the EEC. Its population is approximately 55.4 million and is growing at less than 0.5% annually.

About 34% of the land is used for agriculture and approximately 8% of the labour force is employed by this sector of the economy. The principal products include cereals, feed grains, livestock and dairy products, wine, fruits and vegetables.

France's annual per capita GNP is $14,379, which gives it one of the higher standards of living in Europe. The country has experienced economic growth of about 2% annually since the early 1970's.

b. Level of Peat Imports

According to United Nations trade statistics, France imported about 3.3 million bales of peat moss in 1981. These imports experienced an annual average growth of 29.6% between 1981 and 1985, resulting in 1985 imports of about 9.3 million bales. These numbers were confirmed by the Canadian Embassy in Paris.

The key suppliers of peat to France are West Germany, the Netherlands, the U.S.S.R and Belgium/Luxembourg, which accounted for 54%, 29%, 6% and 6% of France's imports, respectively. The remaining 5% of peat imports originated in other European countries, including Ireland, Italy, the United Kingdom and Sweden.

Imports include both brown peat and blond peat, and the two are frequently mixed together with other ingredients to produce a growing medium for specific applications. Blond is the most popular peat and represents over 90% of imports.

c. Major Uses of Peat

The French market comprises two key market segments, commercial growers and consumers. Currently, commercial growers, which includes nurseries, landscapers, farmers, nursery stock and flower growers, and municipalities, account for about 60% of consumption. Consumers who use

peat for both indoor and outdoor gardening account for the remaining 40% of consumption. Industry sources report that peat consumption by both segments grew during the early 1980's, but it is currently levelling off, and the outlook is for slow, if any, growth for the next five years.

d. Price Points

Current prices for peat in France appear to be very competitive. The key suppliers, West Germany and the U.S.S.R deliver .170m^3 (6ft^3) bales of compressed peat, FOB France, for about $8.80 per bale. Recently, Ireland has aggressively marketed its peat in France and is using a low price to attract buyers. Sources in France report that Ireland is shipping 90m^3 to 100m^3 of bulk peat, compressed into a container and FOB France, for about $31.90 per m^3. This equals a per bale cost of $5.45.

e. Key Importers/Contacts

The following lists the key importers of peat moss in France, known favourably to the Canadian Embassy in Paris.

S.C.P.A. Sa, Le Bois
Le Puy Notre Dame
49260 Montreuil Bellay
Telex: 720161F
Telephone: 41 52 20 00

Ste. de Vente des Produits Specialises
34 Bld. du General De Gaulle
49600 Beaupreau
Telex: 720247F
Telephone: 41 55 02 18

Ets Chauvin Sarl
55 Bld. Albin Durand
BP 14, 84260 Sarrians
Telex: 432044F
Telephone: 90 65 40 23

Tourbières de la Ba Sa
Harricourt
08240 Buzancy
Telex: 830317F
Telephone: 24 30 01 99

Pertil Division
Papeteries Henri Boucher Sa
33 Avenue du Maine
BP28, 75755 Paris Cedex 15
Telex: 203234F
Telephone: 45 38 52 25

Tecsem Sa
132 Rue de la Convention
75015 Paris
Telex: 206074F
Telephone: 45 54 04 47

Les Fils Charnet Sa
28 Rue d'Enghien
69287 Lyon Cedex 2
Telex: 380169F
Telephone: 78 38 09 10

f. Constraints to Market Penetration

Industry sources report that price is probably the key constraint which will limit Canadian penetration of the market. All peat enters France duty free and taxes are applied to all imported peats. Thus, Canadian peat is not subject to higher tariffs than West Germany's. However,

the cost of shipping peat across the Atlantic is about $7.50 per bale and the cost of shipping from the entry port to destinations within France incurs an additional charge. This places Canadian producers at a cost disadvantage to West German and the U.S.S.R. producers who can ship to France via land transport at a total cost, product and freight, for about $1.00 more than Canadian producers' freight cost alone from Saint John to Le Havre, France.

In addition, imported peat must comply with France's labelling and classification standards which are set by AFNOR, the French standards organization. Standard NF U 44-501 specifies the terminology for describing peat, based on its specifications and content.

3. Greece

a. Background

Greece is located in southern Europe, bordering on the Middle East. It is an industrialized nation, although considered to be at the low end of the industrialized scale. It has recently entered the EEC and, despite the fact that Greece has a strong agricultural sector, it has to improve its food processing facilities to meet EEC standards.

Greece has a population of approximately 10 million, which is growing at less than 0.3% annually. One third of the Greek population lives in rural areas and is involved in the agricultural sector.

As an indication of economic performance, annual per capita GNP is $5,280. However, the outlook for Greece

indicates a slowdown in economic growth, coupled with a fairly strong inflationary trend, which will result in a stagnant economic environment in the near term.

b. Levels of Peat Imports

Between 1981 and 1985, Greece's volume of peat imports increased at nearly 29% per annum, from about 100,000 bales in 1981 to 295,800 bales in 1985. The current market for peat moss is estimated at approximately 290,000 bales, according to private importers.

Greece imports primarily sphagnum peat moss, both long and short fibre. The key suppliers include the U.S.S.R. which account for 69% of Greece's imports, the Netherlands with 14% and West Germany with 11%. The remaining 6% of imports originate from several countries including Italy, Finland, Austria and the United Kingdom.

c. Uses for Peat Moss

In Greece, peat moss is used as an organic fertilizer. The Ministry of Agriculture and Forestry is one of the main users of peat as part of its reforestation programs. Details on other specific end-uses are not available.

d. Price Points

According to local importers, the price for peat moss ranges between $8.25 per 6ft^3 bale and $10.00 per bale (FOB Greece). The price includes all expenses and duties involved. Imports from the supplying countries typically fall within the above quoted range.

e. Key Importers/Contacts

The following lists some major peat importers in Greece who are favourably known to the Canadian Embassy:

Violmet Ltd.
11 Kratinou Street
Athens, Greece 10552
Telex: 219122 Vime Gr.
Attention: A. Gelopoulos

B.S. Spyrou and Son
Epe. 36
Piraeus Street
Athens, Greece 10437
Telex: 219133 Spir Gr.
Attention: S. Spyrou

Anthokipeftiki, SA
6 Piraeus Street
Athens, Greece 10431
Telex: 225572 Anar Gr.
Attention: Ms. D. Argyraki

f. Constraints to Market Penetration

Most peat moss is imported to Greece through international tenders by the Ministry of Agriculture and Forestry. Tender documents are available in both Greek and English and a local agent is required to make a submission. Prices have to be quoted in local currency (drachmas) and a phytosanitary certificate has to be provided. The peat should be packed in strong polythylene bags, and the bales should weigh about 50 kgs.

Greece, as a member of the EEC, would consider other EEC peat suppliers as preferred trading partners, putting New Brunswick producers at a competitive disadvantage.

4. Spain

a. Background

Spain has one of the youngest populations in the European Economic Community, with a median age of just over 30 years. As a country with a relatively young population compared to other industrialized countries, Spain, with an annual per capita GNP of $6,216, has been attempting to raise its standard of living and this will be one of the government's major concerns over the next few years.

Spain has a population of nearly 39 million people, most of whom reside in urban areas. In fact, fewer than a quarter of Spaniards live in rural areas. The bulk of the labour force is employed in the service sector, and less than 20% are employed in agriculture.

The economic outlook for Spain reflects steady growth at approximately 3% per year, and a moderate inflation rate.

b. Level of Imports

According to United Trade statistics, Spain's imports of peat increased from 461,000 bales in 1981 to over 1.3 million bales in 1985, exhibiting an average annual growth rate of nearly 30% per annum. The volumes are corroborated by the Canadian Embassy in Madrid.

The main suppliers are West Germany, the Netherlands and Finland which account for 75%, 16% and 5% of imports, respectively. The remaining 4% is imported from other European countries including the U.S.S.R., Belgium, Ireland and Sweden. Imported peat is of the sphagnum variety.

c. Major Uses for Peat

The bulk of peat moss imported into Spain is destined for commercial growers in the horticultural industry.

d. Price Points

The current landed price for peat moss in Spain varies with the country of origin and reflects the different transportation costs. For example, peat imported from West Germany can be shipped by truck and is landed in Spain at an average cost of $4.20 per bale (Cdn$1.00 = 0.01098 pesetas). Peat shipped via water from Finland to Spain has a landed cost of about $10.20 per bale. The price differential indicates why West Germany controls about three-quarters of the peat market.

e. Key Importers/Contacts

The following lists the key importers of peat moss in Spain, known favourably to the Canadian Embassy in Madrid:

Transco S.A.
Adres Mellado, 10
28015, Madrid, Spain
Telephone: (91) 243-3600
Telex: 23336

Cannsa
Angel Baixerao, 9
08002, Barcelona, Spain
Telephone: (93) 319-0400
Telex: 54045 Cnn E

Commercial Y Turbao Projar
Dana Valcarcel, 1
Valencia
Telephone: (96) 369-5684
Telex: 64771

f. Constraints to Market Penetration

The key constraint for New Brunswick producers in supplying the Spanish market for peat moss is Spain's membership in the EEC, with other EEC members being its preferred trading partners. However, if an equally good product was supplied at a competitive price from outside the EEC, it would be able to gain access to the market fairly readily.

5. Portugal

a. Background

Portugal is a recent entrant into the EEC, and gained access to the organization in 1984. However, Portugal does not fit the general industrial profile of most of the other EEC members, as it has a mainly agrarian economic base. One of the main areas for improvement will be upgrading agricultural practices to make Portugal more self-sufficient in terms of food.

Portugal has a population of about 10.1 million, with an average growth rate of 0.7% per year. Over two-thirds of its population live in rural areas, and the bulk of the labour force is involved in the agricultural sector.

Annual per capita GNP is $2,758, and economic growth is expected to be over 3% in 1987. Private consumption is expected to grow due to healthy increases in incomes; however, inflation is still in the double-digit range.

b. Level of Imports

According to United Nations trade statistics, Portugal's import volumes of peat moss grew at an average annual rate of 28.8% between 1981 and 1985. This translates to actual import volumes of nearly 90,000 bales in 1985. According to information gathered by the Canadian Trade Post in Lisbon, the total market size is expected to be between 60,000 bales and 90,000 bales, indicating that the market is supplied solely by imports.

Typically, the type of peat moss currently imported is a fine-grained sphagnum. However, the current market trend is toward substituting prepared substrates for pure peat moss.

The main suppliers of peat moss to Portugal are West Germany, which has the greatest share of the market, at approximately 45%, and the United Kingdom and Sweden, each with approximately 20% of the market.

c. Major Uses for Peat Moss

The major uses for peat moss in Portugal are as part of the soil mixture for ornamental plants and in commercial horticulture.

d. Price Points

Currently, West Germany sells a $6ft^3$ bale of peat for $5.60 (DM7.50) delivered to Portugal.

e. Key Importers/Contacts

Listed below are major importers of peat moss in Portugal, favourably known to the Canadian Embassy in Lisbon:

J.L. Vieria LDA
AV Joao Crisostomo, No. 79-2E
1100 Lisboa, Portugal

Novum-Industries E Representacoes CDA
AV Da Republica, No. 2-4
1000 Lisboa, Portugal

Sociedade Ziockermann Sarl
Rossio No. 3-3
1100 Lisboa, Portugal

f. Constraints to Market Penetration

A number of factors may represent barriers to New Brunswick peat producers in selling to the Portuguese market. The first factor is the cost of freight for Canadian producers, relative to that of European suppliers. As well, there are few direct shipping lines between Canada and Portugal. Portuguese buyers often order quantities below acceptable minimums and, therefore, it may not be economically feasible to supply them. Another key factor is Portugal's membership in the EEC. Peat from other EEC countries gains access to the Portuguese market duty-free. Peat moss imported from Canada faces tariffs of approximately 4.8%.

In summary, Western Europe represents a huge market for peat, and one that currently is self sufficient. However, it appears that the large exporting countries are being pressured by the concerns of environmentalists to lower production. This could result in opportunities for New Brunswick producers in the longer run. A

detailed study of production levels, peat reserves and the inter-country trading will be required to identify and evaluate these opportunities.

B. MIDDLE EAST

1. Egypt

a. Background

Egypt is located in Northern Africa near the Middle East. It has a population of approximately 50.5 million which is growing by 2.7% yearly. Annual per capita GNP is $1,000 and the economic prospects for Egypt are not encouraging in the current environment of weak energy prices, since many Egyptians work in the oil industry in other countries. Previously, these migrant workers' remittances were larger than the whole of Egypt's value of merchandise exports. In addition, as Middle East economies contracted, many of these workers have returned home to Egypt, causing further stress on a weak economy.

b. Level of Importance

Although Egypt's imports of peat declined at an average annual rate of 13.5% between 1981 and 1985, imports have been increasing from the low point of about 41,000 bales in 1984 to over 122,000 bales in 1985. Imports in 1986 were approximately 162,000 bales, indicating that demand for peat is currently on the upswing.

Over half the peat moss imported into Egypt in 1986 came through international tenders put out by the government. The balance was imported through private sector companies. Only sphagnum peat moss is imported.

Traditional suppliers of peat moss to Egypt are Ireland, West Germany, and Sweden. Currently, Ireland accounts for over 90% of the imports, as West German specifications are no longer accepted, and Swedish peat moss is too expensive.

c. Uses for Peat

In Egypt, peat moss is mainly used as a packing material to retain moisture for exported vegetables, particularly table potatoes. One of the specifications which imported peat must meet is that it should retain 60% of its weight in moisture for 48 hours.

Peat moss is also used in some agricultural applications, but the exact nature of this use, or its relative importance, was not indicated through communication with the Canadian Embassy.

d. Price Points

The average FOB (point of origin) price for peat moss is $5.60 per each 40 kg polyethylene bag which contains about $6ft^3$ of peat.

e. Key Importers/Contacts

The following lists the names of principal importers of peat moss in Egypt who are favourably known to the Canadian Embassy:

Nile Co. For Export of Agricultural Bales
19, El Gomhouria Street
Cairo, Egypt
Attention: Exx Eddin Mohammed El Sayed

El Wadi Co., For Export of Agricultural Bales
17, El Bouston Street
Bab El Louk, P.O. Box 8785
Cairo, Egypt
Attention: Mustafa Roushdi El Sayed

Meditrade Co.
4, Talatt Harb Street
4th Floor
Cairo, Egypt
Telex: 93245, Medi UN
Attention: Mostafa Roushdi, Chairman

Aratra Export/Import and Packing Co.
5 Ahmed Orabi Street
Alexandria, Egypt
Telex: 54348 Hlima UN
Attention: Y. Abou Ismail

Embasco
22 Talatt Harb Street
Cairo, Egypt
Attention: Samir El Naggar

Egyptian Agricultural Development Co.
12 El Batal Ahmed Abdel Aziz Street
Dokki, Egypt
Telex: 93745, Agnic UN

Maba Agricultural Company
27, Madkur Street
Al Ahram, Giza Egypt
Telex: 93228 Conco UN
Attention: Mokhtar Abou Basha

f. Constraints to Market Penetration

New Brunswick peat producers do not face any constraints which prevent entry into the Egyptian market for peat. The critical factor in selling peat moss to Egypt is low prices, since the low bidder is typically awarded government contracts. Private sector importers are also very price sensitive.

2. Israel

a. Background

Israel is approximately the size of Massachusetts with a land mass of 20,699 km^2. It lies at the eastern end of the Mediterranean Sea and is bordered by Egypt on the southwest, Syria and Jordan on the east and Lebanon on the north. The population of Israel is approximately 4.2 million people, and has an average annual growth rate of 1.6%. Gross national product was $36.3 billion in 1985 with an annual growth rate of 2%. Per capita income in 1984 was $8,530.

Approximately 22% of the land is used for agricultural purposes, with 6% of the labour force being employed in this sector. Principal agricultural products produced are citrus and other fruits, vegetables, beef, dairy and poultry products.

b. Level of Peat Imports

Between 1981 and 1985, Israel's volume of peat imports increased at an average annual rate of 36%. The actual level of imports was 24,560 bales in 1981, which increased steadily to 84,100 bales in 1985. According to Israeli statistics, the value of imports increased by 13% between 1985 and 1986, but actual volumes were not reported.

About 70% of imports originate in West Germany with the remainder from other European producers, including the Netherlands and Finland.

c. Primary Uses for Peat Moss

The primary use for peat moss in Israel is as an organic fertilizer/soil additive in the horticulture industry, particularly for greenhouses and nurseries specializing in vegetable production. Households also use peat for gardening/lawn improvement purposes.

d. Price Points

The average price of peat in Israel is $8.25 per .170$m^3$ bale (6 ft^3), FOB Israel.

e. Key Importers/Contacts

Major importers of peat in Israel are Hamashbir, a government agency which buys for the kibbutzim (agricultural co-ops) and private sector importers which supply nurseries. Recently, one of the major importers travelled to Canada to identify possible peat suppliers, but could not secure any peat due to shortages. The contact name is:

Soli Ltd.
P.O. Box 196
Rehovot 76101
Telex: 361965
Attention: William Soer

f. Constraints to Market Penetration

An import license is not required in order to export peat moss to Israel. The only disadvantage faced by Canadian suppliers is an 8% duty from which U.S. and EEC suppliers are exempt.

3. Jordan

a. Background

The Middle East Kingdom of Jordan is bordered on the west by Israel and the Dead Sea, on the north by Syria, on the east by Iraq, and on the south by Saudi Arabia. It has a land mass of 96,599 km^2 and a population of about 3.7 million. In 1985, Jordan's gross domestic product was $7.0 billion, and average per capita income was $2,310.

Approximately 5% of the land is used for agricultural purposes, and about 10% of the labour force is employed in that sector. Over 21% of the labour force is involved in industry where all the principal products are resource-based.

b. Level of Imports

According to United Nation statistics, Jordan does not import large quantities of peat moss. However, the demand has been increasing. In 1981, Jordan imported only 3,800 bales of peat, but, by 1985, total imports reached nearly 43,500 bales, for an average annual growth rate of nearly 84%.

According to local importers, however, the volumes of imported peat may actually be considerably higher. Local data indicate imports of peat moss at about 3,500 bags, in a combination of 10ft^3 (300 litre) and 3 ft^3 (80 litre) sizes. The type of peat moss imported was not identified.

The major sources of imported peat moss to Jordan are the Netherlands, West Germany, Finland, Denmark and Ireland

which collectively account for 90% of imports. No one exporter appears to supply more than 25% of the market.

c. Major Uses for Peat Moss

The major use for peat moss in Jordan is as a potting soil ingredient, used mainly by households for indoor plants and by commercial nurseries.

d. Price Points

Prices for the 300 litre bags, about $10ft^3$, are approximately $16.20 to $17.55, landed in Jordan. The 80-litre bags, about 3 ft^3, are priced at between $9.80 and $11.20, landed in Jordan.

e. Key Importers/Contacts

The following lists the key importers of peat, who are favourably known to the Canadian Embassy:

Munir Sukhtian Company
P.O. Box 1027
Amman, Jordan
Telex: 21316
Contact: Nidal Sukhtian (General Manager)

Eastern Company
P.O. Box 131
Amman, Jordan
Telex: 21521 Marto Jo
Contact: Souheil Y Marto
Agriculture Division Manager

Agricultural Materials Company Limited
P.O. Box 431
Amman, Jordan
Telex: 21425 Agmat Jo
Contact: Mustafa Miqdadi (General Manager)

f. Constraints to Market Penetration

According to local sources, there should be no obstacles in gaining access to the peat market in Jordan as long as prices are competitive with existing European suppliers. Also, any potential suppliers of peat moss should make an effort to travel to Jordan and establish direct contact with the major importers.

4. Saudi Arabia

a. Background

Saudi Arabia is one of the major Middle East countries in terms of influence and wealth. It has undergone some severe economic readjustments over the past few years due to the decline in oil prices. The government's goals have been to diversify the economy and decrease its dependence on oil. The private sector is not strong in Saudi Arabia; it accounts for only 20% of GNP, half of which is related to oil revenue.

Saudi Arabia has a population of over 14 million, which is growing at a rate of 5% annually. Nearly half of the labour force is involved in the agricultural sector; however, less than 30% of the population lives in rural areas. Annual per capita GNP is $14,742.

b. Level of Imports

According to United Nations trade statistics, Saudi Arabia's imports of peat have been increasing at an average annual rate of 25% between 1981 and 1985. Actual import volumes increased from 240,700 bales in 1981 to 587,000 bales in 1985.

Local sources quote market size at approximately one million bales which is about double the size indicated by U.N. trade statistics. Thus, we estimate that the market is about 600,000 bales and growing.

The main suppliers of peat to Saudi Arabia are West Germany which shipped over 400,000 bales, the Netherlands with over 22,000 bales and several countries with small shipments, under 2,500 bales, including Finland, the U.S.S.R. and Canada.

c. Major Uses for Peat

Peat moss is used in Saudi Arabia for landscaping applications as an additive to the soil. As well, peat is used in the preparation of soil mixes for both field and greenhouse vegetable production as well as for potted plants.

d. Price Points

The price for peat moss is in the range of $15.00 per 14 ft^3 (400 litre) bale, landed at Jeddah, Saudi Arabia.

e. Key Importers/Contacts

The following lists a number of the major peat moss importers who are known favourably to the Canadian Embassy:

Eastern Province

Saudi Green Nurseries Co. Ltd.
P.O. Box 2849
Damman 31461, Saudi Arabia
Telephone: (03) 850-2532 or 0468
Telex: 897035, SGreen SJ

Central Province

Abdul Rahman Khalij Est.
P.O. Box 20073
Riyadh, 11455, Saudi Arabia
Telephone: (01) 406-7860
Telex: 405016 Mayada SJ
FAX: (01) 406-8282

Western Province

Bahra Development Co. Ltd.
P.O. Box 3595
Jeddah 21481, Saudi Arabia
Telephone: (02) 665-2067 or 1332
Telex: 60-3285 Jaber SJ
FAX: (02) 660-8709

f. Constraints to Market Penetration

The key factor affecting sales of peat in Saudi Arabia is price. Canadian suppliers would have to deliver peat at prices which are competitive with the European suppliers. For example, West German peat is selling for $5.00 to $5.30, FOB port of Hamburg and will incur much lower shipping costs than will Canadian producers. It would be advisable for Canadian representatives to travel to Saudi Arabia in order to make direct contact with some of the key importers.

In summary, the Middle East markets are supplied by European countries which have aggressively marketed their peat moss in this market. Their close proximity to the Middle East gives the European producers a freight cost advantage over Canadian producers.

However, as previously discussed, Western Europe peat producers are coming under increasing pressure to reduce their production and not develop new bogs. Should this pressure slow the growth in peat

production in Europe, a time may come when the European producers will not be able to supply both their domestic and export markets. At that time, opportunities in the Middle East markets may become available as the European producers reduce their exports to these countries, in order to meet domestic demand.

C. PACIFIC RIM

1. Japan

a. Background

Japan is Canada's second largest markets for peat and one of the most desirable Pacific Rim markets for a number of products, including Canadian peat. Although Japan had some economic setbacks recently, its per capita GNP of $14,207 indicates a high standard of living. Its currency has appreciated 40% against the U.S. dollar, there has been a subsequent drop in exports, and GNP growth has slowed. However, the Japanese have made some positive moves by endeavouring to support growth through domestic sources rather than exports. This adjustment will speed Japan's transition from a manufacturing-based economy to a more service-based orientation.

b. Level of Imports

Peat imports in Japan have more than doubled since 1980, to about 916,400 bales annually in 1986, with over 90% originating in Canada. The remaining 10% of imports is from about 10 other countries including the U.S.S.R., China, Taiwan, New Zealand and Western European countries. The largest exporter of this group is the U.S.S.R., which accounted for 5% of total imports.

Although the importers do not see a difference in quality between peat from Canada and peat from the Scandinavian countries, they appear to prefer dealing with Canadian companies. Canada is seen as the most aggressive marketer, and as a dependable and reliable supplier. The latter qualities are deemed the most important factors by the importers. Ten years ago, the U.S.S.R. was a competitive threat, but the quality of its peat was poor, the service was bad, and the Russians were unreliable businessmen. One importer reported that he would not buy peat from the U.S.S.R. because of poor experiences in past dealings.

Peat moss is sold in three grades, fine, medium and coarse, with no other specifications. Packaging, however, is very important because buyers develop brand loyalty, and peat moss is sold with grade and quality characteristics based on brand names. Home owners prefer small 2 ft^3 bales, while commercial buyers favour the larger 6 ft^3 bales.

Distributors believe that the Japanese market for peat has been developing slowly, and expect it to grow in the future. One distributor estimated that the market will grow up to ten times its current size. This growth will come from the three major end users of peat (hobby farmers, commercial farmers and highway construction contractors). We discuss each of these in the following sections.

c. Major Uses for Peat Moss

The two major uses of peat in Japan are as a soil conditioner for farming and in construction to assist

vegetation growth on embankments. Typically, soil conditioning accounts for 60% of the market, with construction uses representing the remaining 40%. However, with the large amount of construction underway, these uses will account for between 50% and 60% of the market for the next two years.

The soil conditioning market comprises hobby farmers, commercial farmers, nurseries and golf courses. Farmers in Japan are very conservative and this accounts for the slow development of the market for peat despite the country's poor soil.

Currently, agricultural chemicals are widely used by farmers to enhance the productivity of their farms. These chemicals have been used for years and farmers are reluctant to change.

However, several factors suggest a movement away from chemicals. First, the effectiveness of chemical fertilizers is being questioned. Secondly, concerns over the effect on health of using so many chemicals are being raised. As a result, many supermarkets now have a naturally grown food section and people in the food production industry are predicting this to be the next big trend in the industry.

The importing companies sell to agricultural co-ops who sell to the individual farmers, or a buying group supported by the farmers.

These co-ops are very strong and well organized. One of the associations conducted a series of tests on peat and the results were favourable. However, the association

neither promotes nor discourages the use of peat. It leaves it up to the individual members or buying groups to develop a "pull through" demand for peat. This has resulted in pockets of high demand areas for peat scattered throughout Japan. These co-ops repackage the peat in $2ft^3$ and $4ft^3$ bags for sale to the farmers.

The hobby farmers also represent a major market segment for peat. This segment is projected to grow quickly in the next ten years, driven by the aging population and the increase in disposable income. Gardening has always been popular in Japan and peat is seen as one of the few ways that hobby farmers can effectively improve the quality of their little gardens.

The distribution system to reach the hobby farmer is complex and seemingly unavoidable. The importer sells to a wholesaler which repackages the peat itself, or contracts this service out and sells the repackaged peat to a distributor. These distributors sell direct to large retail outlets and use brokers to cover the smaller stores. The hobby farmer buys from the retail outlet where the most popular package size is 2 kg or about $1ft^3$.

The main use for peat in <u>construction</u> is embankment strengthening. Peat is mixed with various products (such as moisture, seeds, fertilizer, vermiculite, perlite), depending on the area's needs, and is sprayed onto embankments. This spraying is done along highways and at airports which are required to have green belts on either side, six to seven times the size of the runway.

The peat required for this use must be well screened and contain medium length fibres. If the fibres are too long, the peat clogs the nozzle on the spraying machine but, if they are too short, the peat is dusty when sprayed and the results are not as good.

The National Highway Association, which has its own contractors, purchases peat for construction use from the importers. The peat is shipped from the importer to the construction site where the additives are mixed with it prior to spraying.

One constraint to the construction market is that the site must be located close to a major harbour. The cost of shipping peat by road prohibits its use at sites which are not close to a port. The major projects over the next few years include:

- the Tokyo/Amori highway project,
- the Oita/Nagasaki highway project,
- the Hiroshima coastline project, and
- the Kansai Airport.

The important price level for New Brunswick producers is the one paid by the importer. The complex Japanese distribution systems, with their multiple tiers, result in high markups on peat by the time the product reaches the end user. However, producers do not share in these markups and importers are price sensitive.

One importer reported that peat producers state peat is available in three quality levels. However, he typically buys the lowest priced product and has been satisfied with the quality.

The most recent price information obtained was for a container of Finnish peat purchased in mid-1987 for US$4,800 CIF (cost, insurance, freight are charged in full) Yokohama. This translates to a Canadian dollar cost of $18.00 per bale (373 bales per container) landed in Japan. To be able to offer this price, the Finnish company shipped the peat by rail across the U.S.S.R. Delivery time was about two months, but the importer did not appear to mind. Other importers reported that the unreliability of the Soviet rail system and the high potential for damage make this method of shipping undesirable.

e. Key Importers/Contacts

The following is a list of key peat importers for the Japanese market:

Samsei Bussan Co. Ltd.
c/o Mitsui Annex
3-3-7 Nihonbashi Muronmachi
Chuo-ku, Tokyo 103
Telephone: 270-5722
Contact: Mr. K. Kondo, Manager
Foreign Trade Section
Telex: 02223057

T. Kakiuchi & Co. Ltd.
1-9 Nihonbashi Honcho
Chuo-ku, Tokyo
Telephone: 270-8311
Contact: Mr. T. Iwabuchi
Purchasing Department
Telex: J24583 KAKIUCHI

Kawasho Corporation
c/o World Trade Centre Bldg.
2-4-1 Hamamatsu-cho
Minato-ku, Tokyo
Telephone: 435-3386
Contact: Mr. M. Tsukamoto
Tokyo Chemical Group
Telex: J24277

Iwatani & CO. Ltd.
2-7-1 Haccobori
Chuo-ku, Tokyo 104
Telephone: 555-5833
Contact: Mr. H. Isotake
Telex: J5222060

Benidai Trading Co. Ltd.
c/o Kurihara Bldg.
3-2-12 Uchikanda
Chiyoda-ku, Tokyo 101
Telephone: 256-0551
Executive Vice-President
Telex: 2223919 BENDA J

Honzawa Co. Ltd.
c/o Moritomo Bldg.
16-21 Nihonbashi Koami-cho
Chuo-ku, Tokyo 103
Telephone: 664-6331
Contact: Mr. S. Suzuki, Manager
Overseas Trade Dept.
Telex: 02522801 HOZACO

Watahan International Co. Ltd.
1-4 Yotsuya
Shinjuku-ku, Tokyo 160
Telephone: 358-6085
Contact: Mr. Y. Nohara, Managing Director
Telex: 2322069 WATHAN J

Fukoka Yuhan Co. Ltd.
3-9 Aratsu 2-chome
Chuo-ku, Fukuoka City 810
Telephone: 092-712-4121
Contact: Mr. Makagaki, Manager
Foreign Trade Section
Telex: 725393 FYCFUK J

Mitsukura Boeki Kaisha Ltd.
Kobe Port P.O. Box 137, Kobe
Telephone:
Contact: Mr. M. Yamasato
Sales Department
Telex: 5622973 KDAN J

General Co. Ltd.
Tanaka Tamuracho Bldg.
12-15 Shibbashi 2-chome
Minato-ku, Tokyo 105
Telephone: 504-1451
Contact: Mr. Kubo, Sales Department
Telex: 02225502 GENETO J

Mitsui & Co. Ltd.
2-1 Ohtemachi 1-chome
Chiyoda-ku, Tokyo
Telephone: 285-5454
Contact: Mr. K. Kamashita
General Manager, Second Import
Dept., Fertilizer Division
Telex: J22253

Nichimen Co. Ltd.
1-9 Dojimahama 2-chome
Kitas-ku, Osaka 530
Telephone: 06-347-5111
Telex: J63221 NICHIA

Yamamoto Co. Lyd.
Okayama City
Telephone:
FAX: 0862 79-5228
Contact: Mr. Horikawa
Industrial Equipment & Materials Dept.

Showa Boeki Co. Ltd.
18-27 Edobori 1-chome
Nishi-ku, Osaka 550
Telephone: 06-441-3333
Telex: J63915 SUENOSHO

f. Constraints to Market Penetration

There appear to be no tariff or evident non-tariff barriers to Canadian peat exports to Japan. Therefore, market penetration for Canadian producers is constrained only by the level of competition.

2. Australia

a. Background

Australia is one of Canada's most distant markets, particularly for the Maritimes provinces, but it represents a strong and growing market for a number of goods and, thus, overcomes many of the drawbacks caused by distance. Australia has a population of approximately 15.9 million which is expected to continue growing at

above 1% per year until the turn of the century. In 1985, the annual per capita GNP was $16,436. The current rate of Australia's economic growth is expected to remain steady at about 3.5% for 1987.

b. Level of Peat Moss Imports

According to United Nations statistics, Australia's import levels of peat moss were fairly steady from 1981 to 1985, at between 176,900 and 226,200 bales. Statistics provided by the Canadian Trade Post in Sydney show total imports to be significantly higher.

Since Australia does not have natural peat moss deposits, the level of imports reflects total market size. Sphagnum comprises nearly all peat imports. The key suppliers of peat moss to Australia are New Zealand and West Germany, with New Zealand accounting for 62% of total imports and West Germany accounting for 28.5%.

New Zealand has increased its share of the market to its current position from 11.3% in 1982, when it exported only 3,770 bales to Australia. While New Zealand's position improved, West Germany's market share declined. In 1982, West Germany had over 82% of the market. The balance of Australia's peat moss imports comes from a number of countries, including Ireland, the Netherlands, the United States and Canada.

Australia's developing reliance on its major supplier of peat, New Zealand, is based on geographic proximity, as shipping costs are lower than for any other country. West Germany has no advantages in terms of location but, as the

largest exporter of peat in the world, has had to be aggressive in order to secure markets for itself.

c. Major Uses for Peat Moss

The major users of peat moss in Australia are mushroom growers, who account for 80% of the peat used. Traditionally, this group prefers German peat.

d. Price Points

Currently, for German peat moss the price is $21.50 to $22.50 per 6 cu. ft. bale, landing in Sydney. The price, FOB Germany, is quoted at $7.95 to $8.50 per 6 cu. ft. bale; thus, transportation costs account for 63% of the total price.

e. Key Importers/Contacts

The following is a list of major importers of peat moss in Australia, favourably known to the Canadian Consulate in Sydney:

James McManus, King Wyatt & Co.
Attention: King Wyatt
Telephone: 61.2.273033
Telex: AA75918
FAX: 61.2.2332952

N.G. Williams and Co.
Attention: Norm Williams
Telephone: 61.2.7643925
Telex: AA21249

Laporte JSW Pty Ltd.
Attention: Phillip Whyte
Telex: AA22009
FAX: 61.2.8754468

Primac JHW
Attention: John Hay
Telephone: 61.66.721866
Telex: AA166142
FAX: 61.66.724212

f. Constraints

Imports of peat must meet the following criteria:

- mined at depth,
- free of soil and contaminants, and
- derived from an area that is cultivated and free from growing plants and grazing animals.

In addition, imports of peat are subject to quarantine inspection at port of entry.

D. SUMMARY

In summary, major importers of peat appear to be relatively developed nations which have a large agricultural sector and/or a large consumer market with considerable disposable income. The agricultural sector appears to be the key consumer of peat. In the industrialized nations, the consumer sector also represents a significant market segment.

Importers of peat are price sensitive buyers who appear to be aware of several suppliers, including Canada, Ireland, West Germany and the Netherlands. For example, one importer in Japan reported that Finnish peat was originally quoted to him FOB Finland, and he declined to buy. The Finnish company then quoted a price CIF Japan

and received the order. To lower the cost to the Japanese importer, the peat was shipped to Japan via the Trans-Siberian railway.

We were unable to obtain detailed information on the peat markets of China, Morocco, Algeria and South Africa through either the Coopers & Lybrand offices or those of the Canadian consulates.

However, the markets for peat in each of these countries, with the exception of Morocco, appears to be relatively small. The United Nations statistics show the following peat imports during 1985:

- Morocco, 200,000 bales (165,000 from West Germany),
- Algeria, under 400 bales, and
- South Africa, 15,600 bales (9,000 from Canada).

VII. THE NEW BRUNSWICK PEAT INDUSTRY

This chapter examines the New Brunswick peat industry in detail. It discusses the industry's position in Canada, profiles the industry and concludes with an analysis of the industry's ability to expand production. Our analysis is based upon Statistics Canada data and our survey of New Brunswick producers. Appendix VII contains the detailed results of our survey.

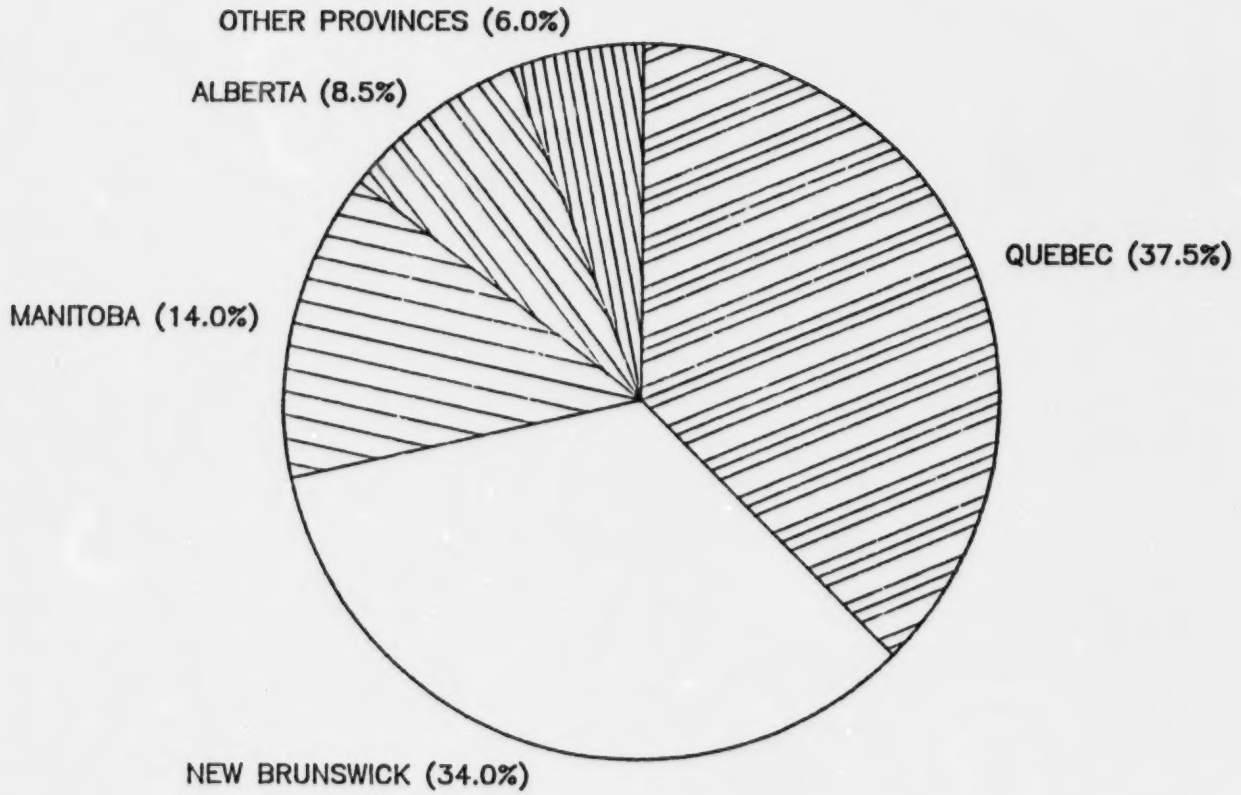
A. INTRODUCTION

Within Canada, the province of New Brunswick is a key producer of peat moss, with operations dating back to the early 1940's. During the 1960's and 1970's, Fisons Western and Fafard, two larger producers, expanded their New Brunswick operations and other companies were started, opening up additional bogs.

The advent of "vacuum harvesting" technology and plastic packaging to the peat industry in the late 1960's had two major, positive consequences:

EXHIBIT 44

CANADIAN PEAT PRODUCTION BY PROVINCE



SOURCE: Canadian Minerals Yearbook, 1985

- Productivity increased substantially and the cost of production dropped by up to 50%.

- The product gained higher acceptance by both the retail trade and consumers as colourful plastic packaging increased point of sale exposure for the product.

B. QUEBEC: NEW BRUNSWICK'S PRIMARY DOMESTIC COMPETITOR

Quebec and New Brunswick dominate the production of peat moss in Canada. Together, they account for about 70% of the annual volume. Manitoba is the next largest producing province, with a 14% share, followed by Alberta, with a 9% share, and the other provinces with 5%. Exhibit 44, opposite, illustrates peat production in Canada by province.

New Brunswick's share of Canadian production is increasing, as shown in Exhibit 45, over. From 1980 to 1985, New Brunswick's portion of Canadian production rose from 25% to 34% as its production rose from 3.6 million bales to 5.8 million bales. During the same period:

- Quebec's portion of total Canadian production dropped from 44% to 38%, despite an increase in actual production from 6.3 million bales to 6.4 million bales.

- Manitoba's portion increased from 9% to 14%.

- Alberta's portion dropped slightly from 10% to 9%.

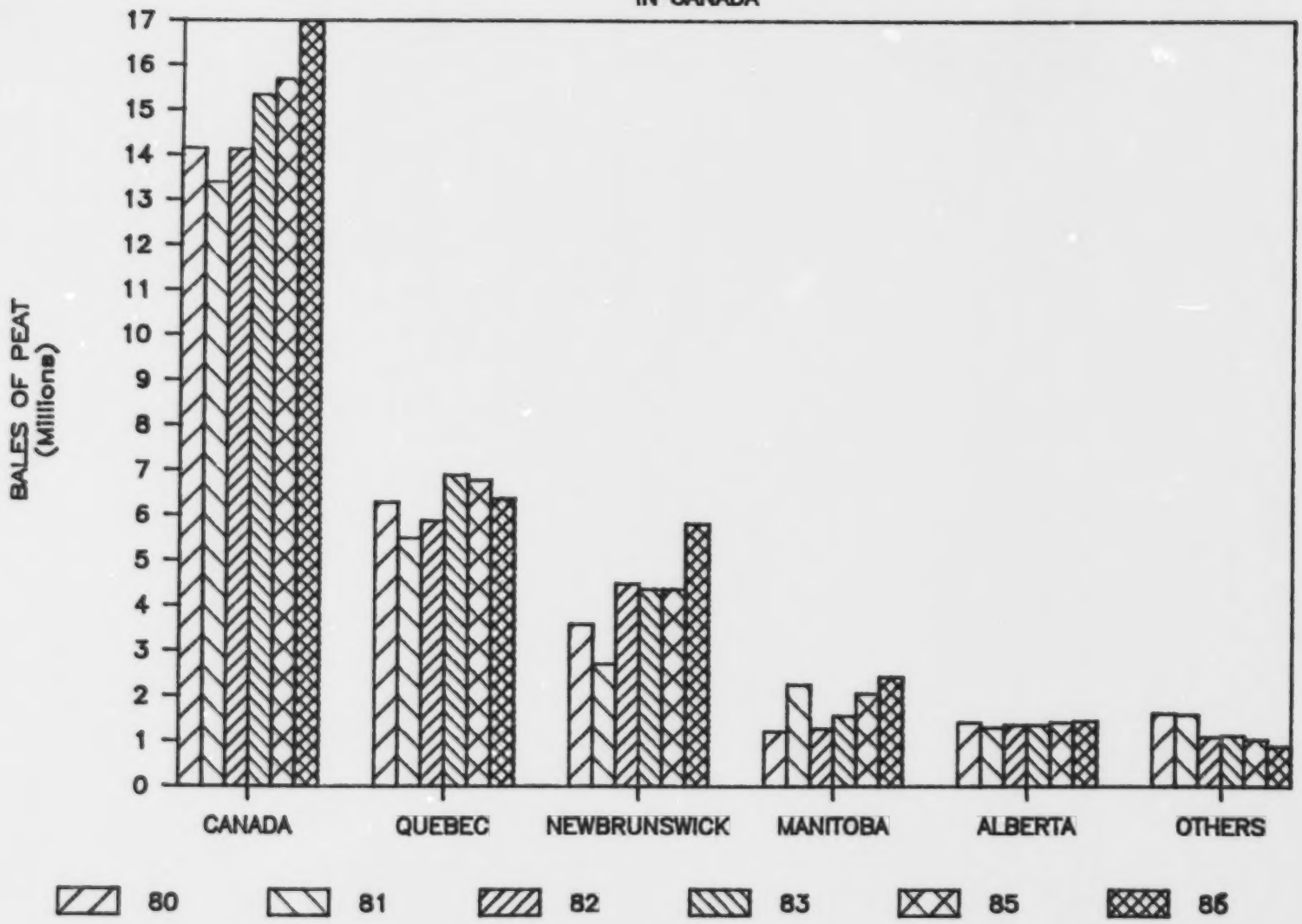
- The other provinces' portion declined from 11% to 5%.

It should be noted that 1985 was a poor production year for Quebec as production fell to 6.4 million bales from 6.8 million bales and

EXHIBIT 45

PRODUCTION OF PEAT

IN CANADA



6.9 million bales for 1984 and 1983, respectively. During our survey, New Brunswick producers indicated that lower Quebec production allowed them to successfully market their increased production.

Statistics Canada data also record shipment values. These data show that both the New Brunswick and Quebec peat industries do not receive their proportionate share of production value compared to production quantity. While they produce about 72% of the volume, their shipments account for only 64% of the total value of Canadian peat shipments. In the west, Manitoba and Alberta have a higher than expected share of the shipment value. Although they produce only 23% of the volume, they account for 38% of the value of total shipments. Exhibit 46, over, compares the volume of shipments to the value of shipments.

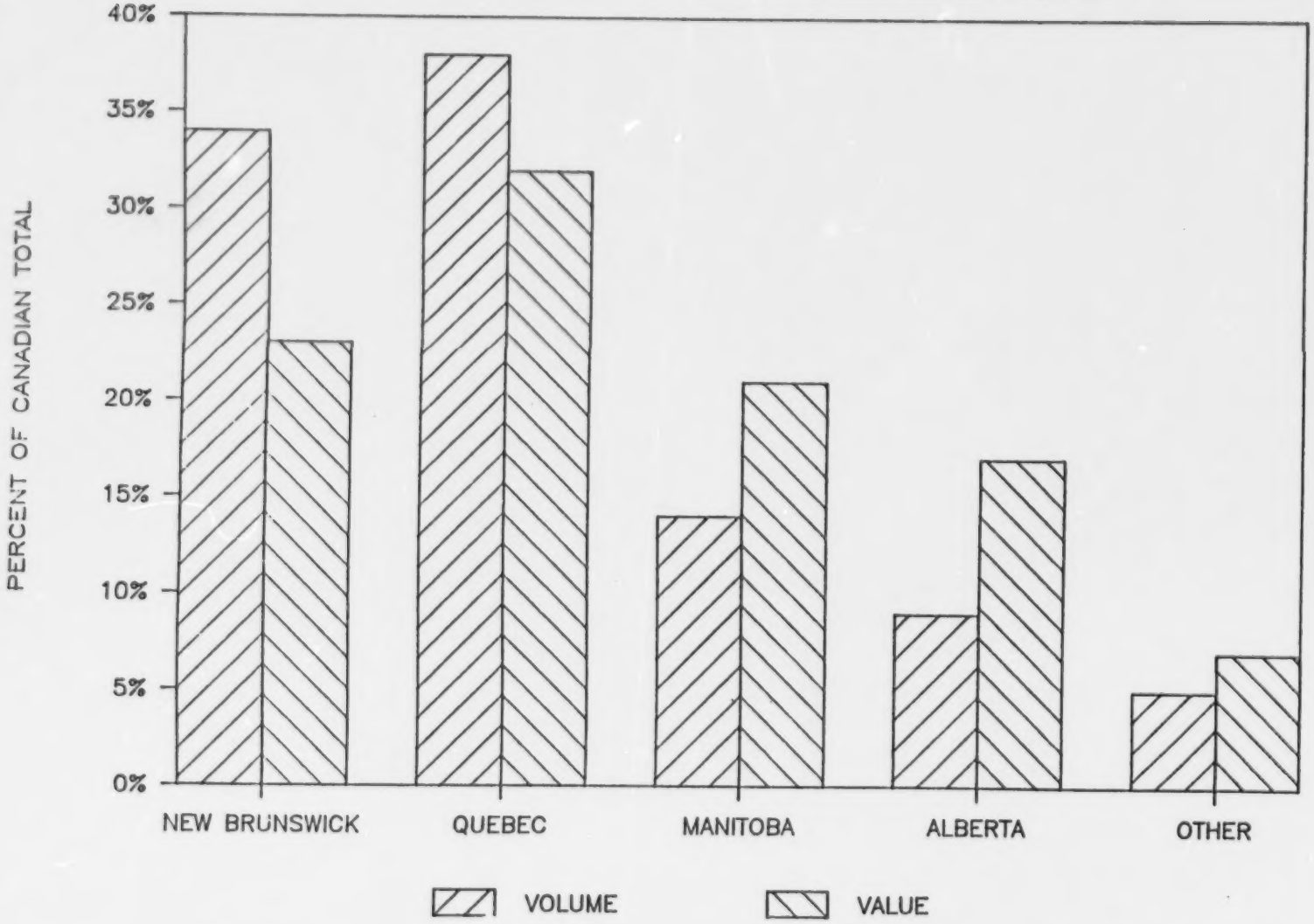
In addition, the real prices which New Brunswick peat producers received have not increased substantially since 1973. The Kates, Peat, Marwick & Co. marketing study completed in 1973 reports that the price of a bale was $1.90, bag included, FOB the plant. Our recent survey indicates current prices at $3.45 to $4.70 for the same package, with an average price of $3.90. In real terms, adjusting for inflation, the price of peat in 1986 would need to be $5.70 for producers to receive the equivalent economic value for their products.

Exhibit 47, over, lists the price range and average prices for peat, as recorded by our survey of New Brunswick producers. The quality of peat in Alberta and Manitoba is not significantly higher than the quality in the New Brunswick and Quebec bogs. Thus, the difference in price is not attributable to quality differences.

Distributors report that market forces may account for the differences in price. Peat moss is a commodity type item.

EXHIBIT 46

DISTRIBUTION OF VOLUME AND VALUE OF CANADIAN PEAT PRODUCTION (1985)



SOURCE: Canadian Minerals Yearbook, 1985

EXHIBIT 47

1986 PEAT PRICES

Package		PRICE, CANADIAN DOLLARS FOB PLANT			
		Bag Included		Bag Not Included	
		Range	Average	Range	Average
1	Cubic Foot	$1.13-1.75	$1.40	$ .85- .90	$ .87
1.5	Cubic Feet (Block Cut)	$1.50	$1.50	-	-
2	Cubic Feet	$1.70-1.90	$1.85	-	-
3	Cubic Feet	$1.90-2.50	$2.20	$1.20-1.25	$1.23
4	Cubic Feet	$2.15-3.26	$2.70	$1.60-1.90	$1.80
5	Cubic Feet	$2.85-3.55	$3.20	-	-
6	Cubic Feet	$3.45-4.70	$3.90	$2.50-2.90	$2.65
6	Cubic Feet (Block Cut)	$4.45-5.10	$4.75	-	-

SOURCE: CLCG Survey of New Brunswick Producers.

Producers in Quebec and New Brunswick provide a much larger supply for their markets than do the western provinces. Although demand for peat moss is higher in the east, the large supply tends to increase competition and reduce market price. In addition, major U.S. peat producing states are located in markets served by the eastern Canadian provinces. Thus, competition is intensified, with the result that prices are driven down.

C. THE NEW BRUNSWICK PEAT INDUSTRY'S PRODUCTION CAPABILITY

Our analysis indicates that the New Brunswick peat industry is operating within 10% to 15% of its production capacity, based on thirty days of production. Through discussions with New Brunswick government representatives, the following factors were identified as the key variables for estimating the productive capacity of the industry:

- area under production,
- number of vacuum harvesters, and
- number of production days.

Industry sources confirmed that the above factors were the ones which limited production. They state that bagging facilities, another potential bottleneck, are not typically a concern. Bagging equipment can run 12 hours a day, if necessary, and the weather does not limit the number of days a firm can bag its peat.

Of the limiting factors, the number of production days is the key variable. On average, about 30 days per year are available for harvesting. To calculate the industry's production limits, based upon the number of days and vacuum harvester capacity, we conducted the following analysis:

- 169 single nozzle machines[1] x 2,500 cu. ft. per hour[2] x 8 hours = 3,380,000 cu. ft.

- 5 double nozzle machines[1] x 6,000 cu. ft. per hour[2] x 8 hours = 240,000 cu. ft.

The above calculations indicate that the industry can theoretically mine about 3.62 million ft^3, or 301,667 bales, per day. Based on this above analysis, the New Brunswick industry could harvest its entire 1985 production of about 5.8 million bales in about twenty days. However, this is a theoretical calculation and assumes ideal conditions. The actual production will be lower as a result of the following factors:

- The peat collected by the vacuum harvesters will contain a volume of air and, thus, it will take more than 12 cubic feet of peat from a harvester to make a bale.

- The moisture content of the peat.

- The shape and size of the bog.

- The time required to transport the full vacuum to the storage area and dump it.

- Downtime for repairs to harvesters.

---

1 The number and types of vacuum harvesters are taken from our survey of New Brunswick producers.

2 The production capacity of the vacuum harvesters is taken from discussions with an information officer from Les Equipment Tardif Inc., a Quebec producer and distributor of vacuum harvesters.

Two other measures are also used by the industry to estimate production capacity. First, industry sources state that a single nozzle machine can mine about 125 bales per hour and a double nozzle machine will average 300 bales per hour. Based on the current number of harvesters, and an eight-hour working day, the New Brunswick peat industry could harvest about 5.4 million bales in about thirty-two days.

A second measure of capacity is the number of hectares under production. Based on discussion with representatives of the New Brunswick Government, we understand that one hectare of bog in production will produce about 2,000 bales annually, based on an average 30-day harvest season, and vacuum harvesting method. Other methods, such as Haku and mechanical blockcutting, have lower production rates of about 1,200 bales annually.

Our survey of New Brunswick producers indicated that about 3,650 ha. are currently in production. The majority of this area, or about 3,350 ha. produces milled peat with vacuum harvesters and the remaining 450 ha. are under production methods such as mechanical blockcutting and the Haku method.

Thus, New Brunswick producers have the capacity to produce about 6.5 million bales of milled peat and 0.5 million bales of cut peat for a total production level of about 7 million bales.

The above three methods of calculating the industry's capacity indicate that actual capacity lies between 5.5 million and 7 million bales. Current production is about 5.8 million bales.

Thus, it appears that the New Brunswick industry is operating at close to capacity, based on its current equipment, area in production, and an average harvesting period of 30 days.

The implications of operating close to capacity are twofold. First, should poor weather limit the production season, New Brunswick producers will be unable to meet demand from current customers and risk losing them to other peat producers or substitute products.

Secondly, the industry is in a position to meet incremental increases in demend but does not appear to have the capacity to open up large new markets. This could limit the industry's ability to successfully capture new markets.

In summary, New Brunswick is a key peat producing province in Canada, second to Quebec in annual peat production. Our survey of New Brunswick producers indicates that the industry is operating within 10% to 20% of capacity.

Market forces appear to limit the revenue the New Brunswick industry receives for its product. Although the majority of its sales are in the two largest U.S. peat consumption areas, the Atlantic region and the North Central region, the New Brunswick industry faces competition from both Quebec and the larger domestic U.S. producers in Florida and Michigan.

VIII. CONCLUSIONS

The purpose of this chapter is to summarize our findings and identify the markets which warrant further evaluation by New Brunswick peat producers. These markets offer potential growth opportunities for continued development of the industry. We have organized our conclusions as follows:

- Canada's position in world markets.
- Opportunities in the North American market.
- Opportunities in overseas markets.
- New Brunswick's ability to meet these opportunities.

A. CANADA'S SHARE OF WORLD TRADE

Canada's share of the world peat trade has declined. World trade patterns for horticultural peat are as follows:

- World peat trade experienced strong growth of 18% and 19% in 1984 and 1985, respectively, after three years of relatively little expansion.

- The large growth markets were Western European countries, including West Germany, the Netherlands, France and Italy, and the United States, Japan and Saudi Arabia.

- In 1985, Canada's exports of peat failed to keep pace with the large increase in world trade and, as a result, its share of world trade declined from 25.7% (1984) to 20.8% (1985). However, Canada remains the second largest exporter of peat in the world, and has maintained its leadership position in its two key export markets, the United States and Japan.

- Since 1981, the Western European market has not been a significant market for Canadian producers. To put this in perspective, the Japanese market in 1985 was about ten times the size of Canada's 1981 share of the Western European market.

- West Germany doubled its exports between 1981 and 1985, from 14.8 million bales to 31.9 million bales, and has captured nearly half of the world peat market. It currently controls the Western European market and exports peat around the world. However, even West Germany has lost markets to new producers with a geographic competitive advantage. For example, New Zealand has increased its share of the Australian market from

11% in 1981 to over 60% in 1985, at the expense of West Germany.

In order to maintain its place in the world peat market, Canada, and therefore, New Brunswick, needs to find new market opportunities to increase its exports of peat. These new opportunities may be found in existing markets, such as the United States and Japan, or in other selected markets overseas, outside of the EEC.

The following sections analyze the opportunities available in the North American market and overseas markets, respectively.

B. OPPORTUNITIES IN THE NORTH AMERICAN MARKET

The North American market for horticultural peat is relatively mature, with slow market growth projected. Yet, despite slow growth, its sheer size results in substantial incremental demand each year. Moreover, as is often the case in mature markets, one specific segment, the retail consumer market, is under-developed.

The United States accounts for about 95% of North American consumption of peat, and its demand is expected to increase by 2% to 3.5% annually through 1990. At current levels of demand in the United States, incremental demand for peat will be 750,000 bales to 1.3 million bales per year.

The projected annual incremental demand in the United States is over half the value of the Canadian market. Thus, we recommend that New Brunswick producers focus their efforts on the U.S. market.

If imports continue to account for 39% of the market, then Canadian producers will have access to another 290,000 to 500,000 bales of demand per year. This represents a market almost as large as Japan becoming available each year.

Several market factors make this opportunity attractive to New Brunswick producers. These include:

- The United States' dependence on imports to meet demand is expected to increase as its peat industry comes under environmental pressures to reduce production. Industry sources expect the closing of more bogs and a further rationalization and concentration in the United States peat industry. As the American markets increase their reliance on the more expensive imported peat, the effect on demand is difficult to predict, Canada, however, is uniquely positioned to benefit from any increase in demand for imported peat by the United States.

- The New Brunswick industry is well positioned in relation to the market. The major U.S. markets, which are along the Atlantic Seaboard and in the North Central States, are close to New Brunswick.

- New Brunswick peat is well established in the market and has a reputation as a high-quality product.

- The New Brunswick industry has an established selling and distribution function in place in these areas.

On the negative side, Quebec producers share the same marketing-related advantages as New Brunswick producers and are closer to the markets. However, Quebec peat is seen by the market as being a lower quality product than New Brunswick's. One issue which will affect Quebec's and New Brunswick's competitive position -- but not addressed by this report -- is the availability of new bogs which are easily accessible and cost effective to develop.

The remainder of this section analyzes the specific opportunities available to New Brunswick peat producers in North America and highlights those which offer the most potential.

1. Soil Mix Market

Industry representatives report that the annual growth rate for soil mixes is between 10% and 20%.

The industry comprises peat producers who have diversified into the higher value-added soil mixes, and firms which do not produce peat and thus purchase their requirements. Several New Brunswick peat producers operate mixing plants in both Canada and the United States.

Although this market is expanding rapidly, existing suppliers appear to have the capacity to meet increased sales. Interviews with producers indicate that their plants have additional capacity to meet the increasing demand for their products.

In addition, several barriers limit new suppliers' entry into this market. They include:

- High-cost liability insurance. Industry participants report "Liability insurance is expensive, if you can get it at all".

- The need for technical sales representatives. Analyzing customer needs to recommend the proper mix and being able to identify potential problems requires a sales representative with a strong technical background.

- High capital costs. Producing soil mixes requires a plant and equipment to thoroughly measure and combine the ingredients to ensure a uniform mix.

Thus, while this particular segment is a high-growth one, it will likely benefit only the current producers. There does not appear to be a good opportunity for the smaller New Brunswick producers, who are not now in this market, to enter it.

2. Consumer Market

Low household penetration (less than 22% of gardeners use soil amendments) suggests that there is an opportunity to increase consumer awareness of peat, and hence, demand.

Based on our analysis, we estimate that the consumer market in the United States consumes about 16 million bales per year. The National Gardening Survey reports that, in 1987, about 16 million households, or 14% of the total number, purchased peat moss. Therefore, on average, each household which bought peat moss purchased only about one 6 cu. ft. bale of peat. Thus, for each percentage point increase in the number of households which purchase peat moss, there is an additional consumer demand for about 1.2 million bales of peat.

Two additional facts further illustrate the potential size of the consumer market.

- While only 16 million (14%) of households purchased peat moss in 1987, over 69 million households are engaged in some form of gardening.

- Peat moss has a wide variety of applications for gardening and distributors interviewed say that the average consumer

is not aware of the benefits associated with using peat moss. Thus, an increase in market penetration should be achievable.

In summary, the consumer market for peat moss in the United States seems to be underdeveloped and represents an opportunity for New Brunswick producers. This would, of course, require a substantial promotion effort on behalf of the peat industry.

3. Professional Growers' Market

The professional growers' market does not appear to offer as much potential for New Brunswick peat producers as does the consumer market. This conclusion is based upon the following rationale:

- Professional growers typically are well informed, knowledgeable buyers of products such as fertilizers, soil conditioners and growing media. They are aware of the beneficial effects of peat moss and are typically using peat moss in the application they believe warrants it.

- Professional growers are very cost and quality conscious and will vary growing media to keep costs in line. They typically use peat moss for plants which mature quickly, since there is a noticeable difference from using peat. In addition, they mix sphagnum peat with reed-sedge peat to lower overall peat costs, while obtaining the quality they require in their growing medium. Bark-based growing media, which tends to be less expensive than peat-based media, are well established for growing larger plants. Thus, peat producers do not appear to have an opportunity to increase their penetration of this market segment without significant price reductions.

EXHIBIT 48

KEY STATISTICS OF PROFILED OVERSEAS MARKETS

Country	Level of Imports (000's of bales) 1985	Annual Average Number of Bales Added (For Period 1981-1985)	Major Suppliers	Estimated Current Prices (Cdn.$/bale)
1. Middle East:				
Egypt	123	Declined	Ireland, Canada	$5.60 (FOB Point of Origin)
Israel	84	14,935	W. Germany, Major European Suppliers	$8.25 (Landed)
Jordan	43	9,980	the Netherlands, W. Germany, Finland Denmark, Ireland	$9.80 (Landed)
Saudi Arabia	587	86,710	W. Germany, Finland,	$7.50 (Landed)
Morocco	202	29,780	W. Germany	Unavailable
2. Europe:				
Western Europe	41,000	4,167,000	Western Europe	$5.00 (FOB Point of Origin)
France	9,300	1,500,000	West Germany, USSR	$8.80 (Landed)
Greece	295	47,070	Major European Suppliers, Canada, USSR	$8.50 (Landed)
Portugal	86	13,630	W. Germany, U.K., Sweden	$5.50 (Landed)
Spain	1,313	212,740	W. Germany, U.K., Finland	$4.20 (Landed)
3. Pacific Rim:				
Australia	196	4,470	New Zealand, West Germany	$21.70 (Landed)
Japan	916	48,920	Canada	$18.00 (Landed)
4. United States	12,559	890,938	Canada	$3.90 (FOB Point of Origin)

SOURCE: CLCG Survey of Export Markets.

- The growers' segment does not appear to be a large growth market. Our statistics on the market are for 1982, and the industry had shown growth over the five-year period from 1978 to 1982. However, peat distributors report that sales of peat moss to professional growers have levelled off, for the following reasons:

  - The nursery industry is coming under competitive pressures from offshore producers. As a result, the growers are becoming more cost conscious and are not experiencing sales growth.

  - Many professional growers who purchased peat moss for mixing their own growing media are closing down their mixing operations. They find it more cost-effective to purchase premixed growing media from soil mix producers. In addition, soil mixers are prepared to mix custom blends for specific growers as part of their marketing effort to increase sales.

In summary, the professional growers' market for peat moss is not growing because the industry substitutes premixed growing media for products it once made in-house, and foreign competition limits its growth. In addition, professional users are very aware of the benefits of peat moss, and increasing the product's penetration of the industry would be difficult.

C. POTENTIAL OVERSEAS MARKETS

New Brunswick peat producers have selected opportunities in several markets. Exhibit 48, opposite, summarizes key statistics for foreign countries which were selected from an initial screening process, as discussed in Chapter VI. We have put the statistics for

the United States market into the exhibit for comparison purposes. Below we discuss the opportunities, as identified by geographic area. This is followed by identification of the key constraints New Brunswick producers face in developing overseas markets.

1. Pacific Rim

Markets potential in two countries was assessed.

a. Japan is a market into which New Brunswick producers have already penetrated and have established contacts.

Peat is well established for horticultural uses in Japan, with over 900,000 bales imported, primarily from Canada, during 1985. Importers expect significant increases as the gardening/farmers' market continues to develop and several large highway construction projects are to be undertaken. In addition, New Brunswick producers do not face major barriers which will limit their further penetration of this market.

b. Australia is a small market, with imports of peat totalling about 200,000 bales in 1985. The annual average incremental increase in imports for the period 1981 to 1985 was 4,500 bales, indicating a slow growth market. In addition, New Zealand's peat industry is taking market share from West Germany in Australia and is well positioned to gain effective control over this market in the near future. Given New Zealand's closeness to Australia, both New Brunswick producers and the West German peat industry will find it difficult to compete with its peat producers.

Thus, Japan is the market in the Pacific Rim upon which New Brunswick producers should focus their efforts.

2. Middle East

The peat markets in five countries located in the Middle East were assessed. Potential opportunities in the Middle East are also closely linked to the situation in Western Europe. These export markets are likely to be the first ones dropped, should European production not keep pace with demand.

a. Saudi Arabia merits further investigation. Peat is well established in the country, with imports totalling over 580,000 bales in 1985. Annual incremental imports have averaged just under 87,000 bales for the period 1981 to 1985.

Up until 1984, Saudi Arabia represented a 29,000 bale market for Canadian peat moss. Since then, West Germany and Finland have taken it over. However, this market is large and growing, and New Brunswick producers may have an opportunity to reestablish Canadian exports to Saudi Arabia.

b. Egypt, Israel, Jordon and Morocco

Four countries -- Egypt, Israel, Jordan and Morocco -- offer limited potential for New Brunswick producers, and would warrant research only after Saudi Arabia is thoroughly investigated. Although they had high annual growth rates for peat imports from 1981 to 1985, ranging from 83% in Jordan down to 25% in Morocco, the individual markets are relatively small, estimated at under 30,000 bales. Thus, the incremental number of bales imported every year by each country is small. In total, the 1985 addition to 1984 imports of peat by the four countries was about 52,200 bales. This increase is only slightly larger than that experienced by Greece for the same period.

Therefore, Saudi Arabia is the key Middle Eastern country and warrants further investigation.

3. Western Europe

Western Europe represents a market for horticultural peat which is three times the size of the United States market. However, the inter-country movement of peat makes the consumption within each country difficult to estimate.

Despite its size, New Brunswick producers have little opportunity to substantially penetrate major European (EEC) peat markets at the present time for the following reasons. First, Canadian peat is more expensive than European peat, due to the cost of trans-Atlantic shipping. (European producers have not been able to penetrate North American markets for the same reason.)

Another factor is the currency exchange rate between the trading countries. Recently, the fall of the Canadian dollar against the German mark has helped to reduce the cost of Canadian peat. However, until the 2:1 relationship between the cost of trans-Atlantic shipment and the cost of a 6 ft^3 bale of peat moss changes, so that the freight costs become less significant, Canadian producers will have difficulty penetrating European markets.

For example, the market in Europe with the highest potential is France. It imports over 9 million bales of peat annually and has virtually no domestic peat production. France's key suppliers are West Germany and the U.S.S.R. Currently, these two countries land peat in France for about $8.80 per 6 ft^3 bale. Canadian producers can not match this price as the trans-Atlantic shipment costs are $7.50 per bale. Therefore, to match the price, New Brunswick producers must supply the product, ship it from the bog to Saint John, New Brunswick, and ship it from the entry port, Le Havre, France, to its final distination for $1.30.

However, one trend is having a positive effect on Canadian producers' ability to penetrate European markets. Industry sources report that European producers are coming under increasing pressure to restrict expansion. Thus, should European producers become unable to meet demand, opportunities will appear for Canadian producers.

These opportunities are likely to appear first in the export markets of European producers. As production becomes limited, the pressure to serve domestic customers first, and then the other EEC members, will result in a lower supply of peat for export markets. European producers' key export markets outside of Europe are located in the Middle East.

To fully understand these opportunities will require a detailed analysis of the production, imports and exports of the peat producing countries in Europe.

Within the EEC, three new members, Spain, Greece and Portugal, may have offered New Brunswick producers some opportunities at this time. As they are currently being integrated into the EEC, the potential for penetrating these markets is greater than for penetrating the established EEC members. However, our analysis did not reveal that opportunities exist in these countries for New Brunswick producers. We comment on each country below:

a. Spain, where the use of peat moss is well established, offers a growing market for the product. Imports of peat have shown an average growth rate of nearly 30% per annum with an average annual increase between 1981 and 1985 of about 200,000 bales. In 1985, Spain imported about 1.3 million bales of peat for horticultural purposes, mainly from West Germany and the United Kingdom. Although the Spanish market is growing, New Brunswick producers will

have a difficult time penetrating it, as the market is supplied by preferred trading partners who enjoy a cost advantage.

b. Greece's use of peat moss appears to be increasing as its agricultural sector raises the quality of its products to compete on European markets. For the period 1981 to 1985, Greece increased its use by over 46,400 bales of peat annually and, in 1985, peat imports totalled over 290,000 bales. Thus, peat appears to be well established for horticultural applications in Greece.

Greece's main sources are the major European suppliers such as West Germany and the Netherlands. This, coupled with the fact that Greece has recently joined the EEC, creates a difficult market for New Brunswick producers to penetrate.

c. Portugal is small market which appears to offer little potential for New Brunswick peat producers. In 1985, Portugal imported about 87,000 bales of peat, primarily from West Germany and the United Kingdom. Its annual average increase in peat imports for the period 1981 to 1985 was under 14,500 bales. Thus, this small, slow growth market, which is well supplied by European neighbours, does not warrant further investigation.

4. Key Constraints

Without exception, a competitive price -- that is, the cost to the importer, is a major criteria for penetrating overseas markets. Although the price paid by the importing country's consumer may appear high in relation to the importer's cost, the exporting country will nevertheless find it difficult to increase its share of the final price. The distribution

channel in the importing country typically cannot be bypassed -- its participants will take the lion's share, no matter how large the difference between the final price and the landed cost.

Quality was the second constraint, but not as important as price. However, except for the U.S.S.R. peat, the peat of major exporting countries was considered comparable. Although a price premium was paid by some countries for a small portion of their imports, the majority of purchases are made on the basis of price.

Thus, to penetrate overseas markets, New Brunswick producers will require competitive landed prices.

D. NEW BRUNSWICK PRODUCERS

The New Brunswick peat industry is well positioned to pursue selected opportunities for growth. However, the availability of peat may limit its ability to serve large new markets because the industry is now operating close to capacity. We base these conclusions on the following rationale:

- Distributors view New Brunswick peat as a high quality product. Two distributors reported that they did not approach commercial growers until they had New Brunswick peat to sell. They do not believe that the quality of Quebec peat is as high.

- New Brunswick is well positioned in relation to the major U.S. peat consuming region on the Atlantic seaboard. Although distributors report that Quebec peat enjoys a freight cost advantage over New Brunswick peat, the cost differential is not large enough to significantly reduce New Brunswick's peat

sales. (The exception is in the mass merchandise segment which believes that any quality differences will not be noticed by the consumer.)

- New Brunswick has a major shipping port, Saint John, and should be able to serve the overseas countries which offer potential. The key constraint for exporters in attempting to penetrate these markets is the landed price in export markets. Since New Brunswick producers appear to run efficient operations which produce peat at a very competitive price, transportation costs become the key issue.

- The New Brunswick peat industry is operating close to its capacity and will not be able to meet a large increase in demand without incremental investment for capacity expansion.

In conclusion, although New Brunswick peat producers are well positioned to pursue the growth and development of their industry, current productive capacity may be a limiting factor in attempting to capture large new markets. Based on our analysis, we recommend the following priorities for continued industry growth:

1. Continue to focus attention on the United States market. This country's dependence on imported peat supplies is increasing and each year's market growth will add 750,000 to 1.3 million bales of incremental demand.

2. Develop the consumer market segment in North America by increasing an awareness of the benefits received from the use of peat through greater promotion activity.

3. Continue to meet the increasing demand for soil mixes. This opportunity is available primarily to existing producers of these

products. The technical product support requirements and related product liability issues limit the appeal of this market segment to new suppliers.

4. Continue to aggressively pursue the Japanese market to ensure that New Brunswick producers obtain a large share of its expected growth. A cohesive program to attract and retain importers and reach the major co-operatives needs to be developed.

5. Conduct an in-depth analysis of the Western European production to fully understand its longer-term market potential. The analysis needs to examine the production, imports and exports of key peat traders in Europe including West Germany, the Netherlands and Ireland. In addition, the quantity of reserves and environmental pressures on the industry need to be evaluated.

   This analysis will also indicate the ability of the European producers to serve their Middle East markets, particularly Saudi Arabia, and, thus, identify the longer-term potential of these markets for New Brunswick producers.

In conclusion, this report has described how the peat moss industry is presently structured in North America and has identified market development priorities for New Bunswick producers.

In addition, overseas markets were evaluated and several countries were identified as development opportunities which warrant further investigation.

APPENDIX I

TERMS OF REFERENCE

APPENDIX I

PEAT MOSS MARKET STUDY - TERMS OF REFERENCE

(ERDA Agreement - Provincial)

I. BACKGROUND

New Brunswick has an expanding horticultural peat moss industry, a comprehensive peatlands inventory, a policy on size structure. The extraction of peat moss is governed by the Quarriable Substances Act.

The last market analysis of the New Brunswick peat moss industry was completed in 1973 (Kates Peat Marwick & Co.). Since then, the New Brunswick industry has matured and world-wide economic conditions have changed, making it desireable to reassess market conditions and project market opportunities.

II. PURPOSE

The two main objectives of this peat moss market study are:

a. To find out how the peat moss market is presently structured in North America and to identify market growth potential.

b. To evaluate the potential for the further development of selected overseas markets.

III. SCOPE

The focus of the study will be on:

a. The North American market: concentrating on, but not limited to, portions of Canada and the United States located within a 2,000 km radius of northeastern New Brunswick.

b. Selected potential overseas markets: Japan, China, Morocco, Egypt, South Africa, Algeria, Middle East (Saudi Arabia and Israel), Australia and New Zealand, France and other western European countries.

IV. WORK TO BE PERFORMED

Without in any way limiting the scope of the work, the study should contain the following elements as minimum requirements.

APPENDIX I

GENERAL OUTLINE OF THE STUDY:

1. **Review of the New Brunswick Peat Moss Industry**

   - Present producers
   - Present total production capacity, demand characteristics and F.O.B. prices
   - Present product characteristics (6 ft^3, etc.)

2. **The North American Market**

   a. Identification of existing markets

      - total consumption
      - market segmentation
      - buying policies and habits
      - geographic location of target markets

   b. Characteristics of demand

      - quality, quantity, variety, and price
      - distribution channels

   c. Competition

      - structure of the North American industry (producers, extraction and processing technologies, characteristics of products, expansion plans, marketing strategies).

   d. Market growth potential

      - trends, new applications, new products

3. **The Overseas Market**

   a. Identification of existing markets

      - total consumption (past, present, projected)
      - buying policies and habits
      - access conditions (transportation, customs)

   b. Characteristics of demand

      - quality, quantity, variety and price
      - distribution channels

c. Competition

- identification of present suppliers of overseas markets
- characteristics of products
- marketing strategies

d. Market growth potential

- trends, new applications, new products

4. **Data Acquisition Phase**

The data acquisition phase should include the use of evaluation forms to be sent to peat importers and users, N.B. exporters and Canadian Embassies. Interviews with major North American peat users and brokers should also be included.

Presentation of Data:

Two reports, one in French and one in English, will be prepared, in a style meeting Mineral Resources Standards, to present the data collected during the study period. All questionnaires should be returned to the Department of Natural Resources and Energy at the end of the study.

Communication:

There will be three meetings between the Department of Natural Resources and Energy representative and the consultant project supervisor: at the beginning of the project, midway, and after the first draft of the report is presented. These meetings will provide general direction, guidance and assistance to the consultant.

Short, monthly, written progress reports will be presented during the course of the study. These reports should contain significant items of interest, and an outline of the work program for the following period.

Three draft copies of the report (French and English versions) shall be presented by February 28, 1987 for review prior to submission of the report in its final form. There will be a hold back of 10 per cent of the study fee pending acceptance of the final report.

APPENDIX I

Ten (10) bound copies of the final report (French and English versions) plus the unbound originals, shall be submitted by March 31, 1987.

A presentation of final findings will be made for the benefit of the New Brunswick Peat Producers.

Submission of Proposals:

Proposals should include company prospectus, services offered and background of qualified personnel who would be assigned to the project including their experience. Names of former clients for whom similar or relevant work has been performed should be presented as references.

It is advised that the lowest or any proposal need not necessarily be accepted and that no reimbursement for proposals shall be made.

Three (3) copies of the proposal should be submitted on or before 16:30 hours A.S.T. on the 30th day of September, 1986, to the attention of Mr. Jacques J. Thibault, Department of Natural Resources and Energy, Mineral Development Branch, P.O. Box 6000, Fredericton, N.B. E3B 5H1.

Information:

Questions, with respect to the study proposal, should be directed to either Mr, Jacques Thibault (506) 453-3687 or to Mr. Donald Barnett (506) 453-2206.

APPENDIX II

BIBLIOGRAPHY

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APPENDIX III

LIST OF FIRMS CONTACTED

APPENDIX III

Canadian Middlemen

Atkins & Dubrow
Port Colborne, Ontario
Mr. H. Zapp

Glen D. Ogilvie Limited
Caledonia, Ontario

Smith Brokerage
Saint John, New Brunswick
Mr. W. Perry

U.S. Middlemen/Users

Grand Anse Peat Moss
Belmont, Mass.
Mr. Paul Tocci

Lexington Gardens
Lexington, Mass.
Frederick Hess

Tessman Seed and Chemicals
Sioux Falls, South Dakota
B. Mieding

Southern Importers Inc.
Greenboro, North Carolina
John Balderacchi
Dan Balderacchi

American Clay Works and
Supply Company
Denver, Colorado
Mr. L. Strock

Maximilian Lerner Corporation
New York, New York
Mr. M. Lerner

Lawn and Garden Supply Co.
Phoenix, Arizona
Tucson, Arizona

Conrad Fafard Inc.,
Springfield, Mass.
Mr. H.H. Fafard

Denver Wholesale Florists
Denver, Colorado

John Colby
Iowa
Mr. John Colby Jr.

Tessman Seed & Chemical
Egan, Minnesota
R. Hendrikon

Vaughan Seed Company
Downers Grove, Illinois
Mr. B. Doeckel

Hyde Park Product
Manaroneck, New York
Mr. Gross

Stoll & Sons
Portland, Oregon

APPENDIX III

U.S. Middlemen/Users
(Cont'd)

Klier Nursery & Garden Suppliers
Minneapolis, Minnesota
Howard Klier

Barzan International
Minneapolis, Minnesota
Don Haukan

Olathe Grass Pad Warehouse
Olathe, Kansas

Montgomery Seed
Montgomery, Alabama
John Morgan

Barhart Garden Centre
Atweed, Kansas
Vivian Barhart

Hicks Nurseries Inc.
Westbury, N.Y.

North East Nursery
Peabody, Mass.

Poole and Fuller Garden Centre
Winter Park, Florida
Mr. R. Knight

Nu-Turf of Pompano Inc.
Pompano Beach, Florida
Mr. W. Murphy

R.L. Gould Distributors
Minneapolis, Minnesota
Fred Klassen

J.R. Johnson Wholesale Supply & Co.
Roseville, Minnesota
Nancy Prickett

Tessman Seed & Chemical Co.
St. Paul, Minnesota
Clarisse

Schuy Macher Inc.
St. Paul, Minnesota
Tony Kipple

Holbrook Farm & Nursery
Fletcher, N.C.

C & R Supply
Sioux Falls, South Dakota

Master Gardens Nursery
Delray Beach, Florida
Mr. D. Myers

Goochland Nurseries Inc.
Ft. Meade, Florida
Mr. E. Brown

Central Florida Nursery
Fruitland Park, Florida
Ms. M. Burke

APPENDIX III

U.S. Middlemen/Users
(Cont'd)

Winter Haven Nurseries Inc.
Winter Haven, Florida
Mr. D. Stabler

Cypress Creek Nurseries Inc.
Windemere, Florida
Mr. W. Colburn

The Triangle Nursery
McMinniville, Tennessee
Mr. E. Porter

Sunbelt Growers
Ft. Meade, Florida
Mr. D. Barnett

Hardy Nursery
Zolfo Springs, Florida
Mr. T. Levitz

French Importers

Tourbières de la Bar S.A.
Buzancy, France
Mr. Cascier

Ets Chauvin Sarl
Beaupeau, France
Mr. Chauvin

Tecsem
Paris Franch
Mr. Lequis

Japanese Importers

Sowa Boeki Co. Ltd.
Osaka, Japan
S. Tomitaka
T. Yoshinaga

Iwatani International Corporation
Osaka, Japan
H. Itoh
Y. Ozaki

Mitsukura Boeki Kaisha
Kobe, Japan
Mr. Tamura

Peat Producing States and Producers

Michigan Department of
Natural Resources
Lansing, Michigan
Mr. W. Walden

Minnesota Department of
Natural Resources
St. Paul, Minnesota
Mr. D.J. Olson

APPENDIX III

Peat Producing States and Producers
(Cont'd)

Illinois Geological Survey
Champaign, Illinois
Mr. J. Masters

Florida Department of
Natural Resources
Mr. C. Hendry Jr.

Vita Green
Clermont, Florida
Mr. W. Cicale

Hypernox Inc.
Imlay City, Michigan
Mr. C. Finker

Wisconsin Geological Survey and
Natural History
Dr. M. Ostrom

Kent Lake Peat Farms
Bowling Green, Ohio
Mr. A. Weaver

Milburn Peat Co. Inc.
La Port, Indiana
Mr. G. Holder

Government Contacts

Energy, Mines and Resources Canada
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Michael Prudhomme

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Ottawa, Ontario
Mr. D. Stonehouse

U.S. Horticultural Census
Washington, D.C.
Mrs. J. Mon

U.S. Department of Interior
Bureau of Mines
Washington, D.C.
Mr. C. Davies

Atlantic Provinces Transportation
Commission
Moncton, New Brunswick
Mr. P. Vuillemot

Canadian Transportation Commission
Ottawa, Ontario
Mr. B. Fry

APPENDIX III

Associations

Bedding Plants Inc.
Okemos, Missouri
Executive Assistant

American Mushroom Institute
Kennet Square, Pennsylvania
Mr. Harris

American Nurserymen
Chicago, Illinois
Mr. R. Schafer

Canadian Nurserymen
Toronto, Ontario
Mr. P. Hetherington

Agronomy Society
Wisconsin
Executive Director

Forestland Management Centre
Olympia, Washington

National Gardening Association
Burlington, Vermont
Mr. B. Butterfield

U.S. National Committee of the
International Peat Society
Mr. D. Grubich

American Association of Nurserymen
Washington, D.C.
Mr. D. Jelinek

American Greenhouse Vegetable Growers
Elyria, Ohio
Mr. J. Farley

Horticultural Society
Alexandria, Virginia

APPENDIX IV

INTERVIEW GUIDE

APPENDIX IV

NEW BRUNSWICK

PEAT MARKETING STUDY

MIDDLEMAN/END USER INTERVIEW GUIDE

Good _____. My name is _____ and I work with The Coopers & Lybrand Consulting Group. We are studying the North American market for peat moss on behalf of the New Brunswick Government. A major part of the study involves a survey of middleman/end users to obtain their views on how peat producers can better meet their needs. I will be in your area on _____ and would like to stop in and speak with you for about one-half hour. Would you be available?

Name: _____

Location: _____

Contact: _____

SECTION A: DESCRIPTION OF BUSINESS

1. Please describe your operation.

SECTION B: MARKET STRUCTURE

2. Do you carry different varieties and qualities of peat moss and substitute products (such as barks, sawdusts and mulches)?

3. Who are your main suppliers of each peat moss?

4. What percentage of your purchases do you buy from each supplier?

5. What factors currently favour the emergence of new suppliers?

6. What factors are currently likely to lead to the reduction of competitors?

7. Who are the main end users?

8. What products do they buy? Volumes? Quality?

9. What percentage of your sales, by product, is to each end user?

10. What package sizes does each end user buy (for each product)?

SECTION C: MARKET TRENDS

11. How does the market size compare with 10 years ago? 5 years ago? last year?

12. Has demand shifted among the end user industries? How?

13. What changes are occurring in the user industries which are likely to induce a change in demand?

14. What changes are occurring in the product or substitutes which are likely to induce a change in demand?

15. What trends are likely to attract new entrants into the market?

16. What trends are likely to reduce the numbers of competitors in the future?

17. What is the price trend over the past 10 years? 5 years? last year?

18. What is your current cost of peat by size? FOB Point?

SECTION D: PURCHASING PRACTICES AND CRITERIA

19. How frequently do you order peat moss? peat products? substitutes?

20. What are your purchase criteria?

- Price
- Quality
- Delivery
  - timeliness
  - reliability
- Other

21. How important is each criterion? **(Weight by allocating 100 points among the criteria.) (PROBE to understand criteria.)**

SECTION E: ATTITUDES TOWARDS NEW BRUNSWICK PRODUCTS AND PRODUCERS

22. Have you every sold/used New Brunswick peat moss?

23. Going back to your purchase criteria, how do New Brunswick products compare to competitive products. **(PROBE).**

_____

_____

_____

24. How does the competition compare (see question 3)?

25. How do substitute products compare?

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APPENDIX V

PRODUCER QUESTIONNAIRE

NEW BRUNSWICK

PEAT PRODUCER SURVEY

Good _____. I'm _____ from The Coopers & Lybrand Consulting Group, a management consulting firm. I'm calling in regards to the letter you received from our firm about a marketing study we are conducting for the New Brunswick Government. The study concerns marketing opportunities for peat. I would like to set up an appointment on _____ to speak with you about your peat operations.

NOTE: Assure respondent that all information will be keep confidential.

Company : _____

Name : _____

Date : _____

Time : _____

Location: _____

SECTION A: BACKGROUND INFORMATION

First of all, I would like to ask you a few background questions to help us classify your answers along with everyone else who has participated in the survey.

1. How many people were employed full-time by the company in 1986 and how many were employed part-time?

   _____ full-time employees

   _____ part-time employees

2. How many hectares did your firm have in production in 1986?

   _____ # of hectares

   _____ other (_____) (RECORD MEASURE TO BE CONVERTED TO HECTARES).

3. Which of the following products did you produce in 1986? (READ LIST).

	Produced	Not Produced
Raw peat	1	2
Soil replacement/mixes	1	2
Peat with inert additives such as stryofoam	1	2

SECTION B: PRODUCTION

4. What has been your production of peat for the past three years? (In 6 cubic foot bale equivalents at a 2:1 compression ratio.)

	1983	1984	1985
Q4 Production of Peat	_____	_____	_____
Q5 (Production Techniques)			
% milled peat (vacuum harvesting)	_____	_____	_____
% mechanical block cutting	_____	_____	_____
% other (specify) _____	_____	_____	_____
(specify) _____	_____	_____	_____

NOTE: Key is volume and compression ratio.

5. For 198__ (START WITH 1985 AND WORK BACK TO 1983) what % of production was by each of these production techniques: (RECORD ABOVE).
   - milled peat (vacuum harvesting)
   - mechanical block cutting
   - other (specify)
     - handcut
     - milled peat (ridge method harvesting)

6. What types of harvesting equipment did you use last year? (READ LIST).

	Q6 Used	Q7 Number
Vacuum harvesters - one nozzle machine, 2,500 CFH - two nozzle machine, 6,000 CFH	1	_____
Mechanical block-cutting machines	1	_____
Tractors		
- under 25HP	1	_____
- 25HP - 50HP	1	_____
- Over 50HP	1	_____
Other (specify)	1	_____
_____	1	_____
_____	1	_____
_____	1	_____

7. How many _____ (READ EACH PIECE OF EQUIPMENT USED) did you operate last year? (RECORD ABOVE).

NOTE: Production machinery does not include ground preparation equipment such as ditching machines, rakes and harrows. If bulldozers are used to pull vaccums, they should be considered harvesting equipment.

8. How many stage screening do you have?

	Unit 1	Unit 2	Unit 3
- Single	_____	_____	_____
- Double	_____	_____	_____
- Triple	_____	_____	_____
Q9 Percentage	_____	_____	_____

9. What percentage of peat goes through each type of screen? (RECORD ABOVE).

10. What type of bagging equipment did you use in your plant last year?

Type	Unit 1	Unit 2	Unit 3
3 Station - 6 cubic foot - 4 cubic foot	_____ _____	_____ _____	_____ _____
4 Station - 6 cubic foot - 4 cubic foot	_____ _____	_____ _____	_____ _____
Q11 Percentage	_____	_____	_____

11. What percentage of peat goes through each unit? (RECORD ABOVE).

SECTION C: PRODUCTS SOLD

Now, I would like to ask you about your sales last year.

12. Which of the following products did you sell last year?

	Sold	Not Sold
Raw peat moss	1	2
Peat moss with inert additives such as styrofoam	1	2
Soil replacement/mixes	1	2

SECTION D: RAW PEAT

I'm going to ask about raw peat moss, peat moss with inert additives and soil mixes in turn.

13. First, how many 6 cubic foot bale equivalents (2:1 compression ratio) of raw peat did you sell last year?

_____ 6 cubic foot bale equivalents

14. And what percentage of your sales (by volume) were in each of the following size categories?

Package	Q14 %	Q15 $	Q16 Bag incl. Y/N
1 cubic foot or less	____	____	____
2 cubic foot	____	____	____
3 cubic foot	____	____	____
4 cubic foot	____	____	____
5 cubic foot	____	____	____
6 cubic foot	____	____	____
Loose peat	____	____	____
Other (specify size & compression)			
_____	____	____	____
_____	____	____	____
	100%	(MAKE SURE TOTAL EQUALS 100)	

15. What was your FOB plant price for _____? (READ EACH SIZE USED, RECORD ABOVE).

16. Did the price include the cost of the bag? (RECORD ABOVE).

17. And to whom did you sell the raw peat moss to last year (1986)?

	Q17 Sold	Not Sold	Q18 %
Own sales organization or affiliated company	1	2	____
Broker/Agent/Distributor in Canada	1	2	____
Broker/Agent/Distributor in U.S.A.	1	2	____
Retail Outlets	1	2	____
End User/Other specify	1	2	____
_____			____
_____			____
_____			____

18. What percentage of your sales (by volume) were to _____? (READ EACH GROUP MENTIONED ABOVE).

SECTION E: PEAT MOSS WITH INERT ADDITIVES

Now, I'm going to ask about peat moss with inert additives such as styrofoam.

19. First, how many 6 cubic foot bale equivalents (at 2:1 compression) of peat moss with inert additives did you sell last year?

_____ 6 cubic foot bale equivalents

20. What percentage of the product is peat?

_____ %

21. And what percentage of your sales (by volume) were in each of the following size categories

Package	Q21 %	Q22 $	Q23 Bag incl. Y/N
1 cubic foot	____	____	____
2 cubic foot	____	____	____
3 cubic foot	____	____	____
4 cubic foot	____	____	____
5 cubic foot	____	____	____
6 cubic foot	____	____	____
Loose peat	____	____	____
Other (specify size compression)			
	100%	(MAKE SURE TOTAL EQUALS 100.)	

22. What was your F.O.B. plant price for _____? (READ EACH SIZE USED, RECORD ABOVE).

23. Did the price include the cost of the bag? (RECORD ABOVE).

24. And to whom did you sell the peat moss with inert additives? (READ LIST).

	Q24 Sold	Not Sold	Q25 %
Own sales organization or affiliated company	1	2	____
Broker/Agent/Distributor in Canada	1	2	____
Broker/Agent/Distributor in U.S.A.	1	2	____
Retail Outlets	1	2	____
End User/Other specify	1	2	____
_____			
_____			
_____			
			100%

25. What percentage of your sales were to ____? (READ EACH GROUP MENTIONED ABOVE).

SECTION F: SOIL REPLACEMENT/MIXES

Now, I'm going to ask you about soil replacement/mixes.

26. First, how many 6 cubic foot bale equivalents (2:1 compression ratio) of soil mix did you sell last year? _____ Total

27. What percentage of the product is peat? _____ %

28. How was it packaged for shipment

Q28 Type	Q29 %	Q30 $	Q31 Bag incl.
_____	____	____	____
_____	____	____	____
_____	____	____	____
_____	____	____	____
_____	____	____	____
_____	____	____	____

29. What percent of your sales (by volume) were in ____. (READ EACH TYPE OF PACKAGE USED, RECORD ABOVE).

30. What was your F.O.B. plant price for ____? (READ EACH PACKAGE USED, RECORD ABOVE).

31. Was the cost of the packaging/bag included? (RECORD ABOVE).

32. And to whom did you sell the soil mixes. (READ LIST).

	Q32 Sold	Not Sold	Q33 %
Own sales organization	1	2	____
Broker/Agent/Distributor in Canada	1	2	____
Broker/Agent/Distributor in U.S.A.	1	2	____
Retail Outlets	1	2	____
End User/Other specify	1	2	____
_____			____
_____			
_____			

33. What percent of your sales (by volume) were to ____.
(READ EACH GROUP MENTIONED ABOVE).

SECTION G: ACTIVITIES

34. What selling/promotion activities, if any, do you undertake? (BE SPECIFIC AND DESCRIBE).

_____

_____

_____

_____

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APPENDIX VI

LIST OF CANADIAN CONSULATES AND COOPERS & LYBRAND OFFICES CONTACTED

APPENDIX VI

COPY OF TELEX

MESSAGE:

The Coopers & Lybrand Consulting Group is conducting a study on behalf of the Canadian and New Brunswick governments, investigating potential export markets for New Brunswick peat moss. We have selected a number of countries which seem to offer some market potential for peat moss. We would appreciate any assistance that you can provide us in gathering further information on the peat market in .

Below please find a list of questions which we are trying to answer for the various countries. If you have any difficulties with this request, please contact me at:

The Coopers & Lybrand Consulting Group
135 King Street East
Toronto, Canada
M5C 1G6

Tel: (416) 366-1921

Telex: 06-23590
Answerback: COLYBRAND TOR

Fax: (416) 361-0467

1. What is the estimated size of the peat moss market?

2. What types of peat moss are imported (ie., sphagnum, hypnum humus)?

3. What are the uses for peat moss?

4. Which are the current countries supplying each type of peat moss and what are their volumes?

5. What are the current prices for peat, FOB point of entry?

6. Who are the major importers of peat moss?

7. What constraints must New Brunswick overcome to gain entry to the market?

APPENDIX VI

LIST OF COUNTRIES TELEXED

AUSTRALIA

Telex: (Destination code 71) 20600
(CANGOVT AA20600)

M.M. Vujnovich
Consul and Senior Trade Commissioner

BARBADOS

Telex: (Destination code 0392) 2247
(2247 CANADA WB)

K.G. Whiting
First Secretary (Commercial)

EGYPT, ARAB REPUBLIC OF

Telex: (Destination code 91) 9-2677
(CANCAR UN)

R.R.M. Logie
Counsellor (Commercial) and Consul

GREECE

Telex: (Destination code 601) 215584
(215584 DOM GR)

F. Morissette
Councellor (Commercial)

ISRAEL

Telex: (Destination code 606) 341293
(341293 CANAD IL)

A. Hausvater (Ms.)
Commercial Officer

APPENDIX VI

JAMAICA

Telex: (Destination code 291) 2130
(2130 BEAVER JA)

Michael P. Whalen (Mr.)
First Secretary (Commercial)

JORDAN

Telex: (Destination code 493) 23080
(23080 CANAD JO)

G.E. Rishchynski
Second Secretary (Commercial) and Vice-Consul

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Telex: (Destination code 22) 1771191
(DMCNME)

B. Badani
Counsellor (Commercial)

MOROCCO

Telex: (Destination code 407) 31964M
(CDARABAT 31964M)

Bruno Picard

PORTUGAL

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(DOMCAN P)

L. Bustos
Counsellor (Commercial) and Consul

APPENDIX VI

SAUDI ARABIA

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J.P. McLachlan
Counsellor (Commercial)

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(27347 DOMCA E)

Mr. O.T. Wismer

TRINIDAD AND TOBAGO

Telex: (Destination code 294) 22429
(22429 DOMCAN WG)

Desmond Hobson-Garcia

LIST OF COOPERS & LYBRAND OFFICES TELEXED

PARIS, FRANCE

Telex: 641415

FRANKFURT, WEST GERMANY

Telex: 414 534 TVCL D and 176 997 622 TVCL

ROTTERDAM, THE NETHERLANDS

Telex: 27096

LONDON, ENGLAND

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SHANGHAI, CHINA

Telex: 33273

APPENDIX VII

PROFILE OF THE NEW BRUNSWICK PEAT INDUSTRY

APPENDIX VII

PROFILE OF THE NEW BRUNSWICK PEAT INDUSTRY

This appendix provides a profile of the New Brunswick peat industry and is based upon information gathered from our survey of twelve New Brunswick producers.

A. THE INDUSTRY RELIES ON PART-TIME EMPLOYEES

For every full-time person, the industry employs about 12½ part-time people. During 1986, the twelve producers employed 59 full-time people, ranging from ten for the larger firms to none for small producers. Part-time employees totalled 745 during 1986 and firms employed from 15 to 130 part-time workers during the production season.

This heavy reliance on part-time workers allows the industry to match employment to production and minimize its overhead costs.

B. PRODUCTION HAS INCREASED 50% FROM 1983 TO 1985

In 1983, the New Brunswick industry produced about 3.56 million 6 cu. ft. bale equivalent (bales). This increased to about 5.34 million in 1985. During this time, two new producers came into production.

The main production technique used is vacuum harvesting which accounted for 91% of the peat produced in 1983 and 93% in 1985. All twelve producers reported using vacuum harvesting during 1985.

The remaining 9% of production comes from two methods. Three firms also report using mechanical blocking techniques and one firm reported using a Finnish production technique.

APPENDIX VII

C. THE INDUSTRY EMPLOYS A VARIETY OF EQUIPMENT

The production equipment used is varied. Below we discuss each application.

1. Harvesting Equipment

The industry reports that the following harvesting equipment was used in 1985:

- 252 tractors.
  - 9 under 25 HP,
  - 97 from 25 HP to 50 HP, and
  - 146 with 50 HP or more.

- 174 vacuum harvesters.
  - 169 single nozzle machines, and
  - 5 double nozzle machines.

- Other mobile equipment including
  - front end loaders,
  - bulldozers, and
  - trailers.

2. Screening and Bagging

The New Brunswick industry screens all the peat harvested, with firms operating from 1 to 7 screening units. In total, the industry reported using 30 screening units in 1985.

The majority of the peat, about 76%, is double screened. Six firms double screen 100% of their production while two firms

double screen the majority of their production and either single or triple screen small amounts. Four firms single screen their production.

The industry operated 65 bagging units during 1985 of which:

- 22 were one-station machines,
- 1 was a two-station machine,
- 37 were three-station machines, and
- 5 were four-station machines.

Over 60% of production went through three station machines which were operated by nine producers. Three firms use one or two station machines and 30% of production went through these machines. The remaining 10% of production went through four-station units operated by four firms.

D. PRODUCERS SOLD THREE PRODUCT LINES DURING 1986

The New Brunswick producers surveyed reported selling three product lines during 1986:

- all twelve producers sold raw peat,
- three producers reported sales of soil mixes/replacements, and
- one producer sold peat with inert additives.

We discuss each product line below.

APPENDIX VII

1. Raw Peat Represents the Largest Product Line

Of the three product lines, raw peat, with 1986 sales of about 4.7 million 6 ft^3 bale equivalents, represents the bulk of the peat industry's sales.

Eight of the producers sell their peat with the bag included, while the other four typically sell their peat to customers who supply their own packaging.

We comment on the distribution of sales by package size as follows:

- All twelve producers reported selling 6 ft^3 bales and this size accounted for 50% of the industry's sales.

- The second largest selling package was the 4 ft^3 package with 26% of the industry's sales. Eleven of the twelve producers reported selling this package in 1986.

- Two firms marketed a 5 ft^3 package during 1986. We can not provide details on the sales for reasons of confidentiality.

- Eight firms packaged a 2 ft^3 package during 1986 and this size represented 4% of sales.

- The industry also packaged the following sizes:

  - 1 ft^3,
  - 1.5 ft^3, and
  - 3 ft^3.

APPENDIX VII

Individually, each of the above sizes represented less than 3% of sales and fewer than three firms typically produce the package size. The exception is the 1 ft^3 package which seven producers reported selling during 1986.

New Brunswick producers sold raw peat through a variety of distribution channels during 1986. The principal channel was to an affiliated company which accounted for over 60% of peat sales. The second largest channel was through distributors, with Canadian-based firms handling 17% of New Brunswick's peat sales, and American-based firms accounting for 10% of sales. Direct sales to end users account for another 8%, and the remaining 2% of sales went direct to retail outlets or to other types of purchases.

2. Three Producers Sold Soil Mixes/Replacements During 1986

Three producers reported selling a total of 624,000 6 ft^3 bales of soil replacements during 1986. The percentage of peat varies by mix but, typically, falls between 70% and 90%, by volume.

New Brunswick producers sold over 90% of their soil mixes through the following three channels:

- 37% to retail outlets,
- 32% to affiliated companies, and
- 23% to end users.

The remaining sales were to brokers, both Canadian and American, and other purchasers.

3. Only One Producer Sold Peat With Inert Additives During 1986
Thus, we can not provide information on this product category for reasons of confidentiality.

In summary, the New Brunswick producers market a variety of packages and products to meet market demands. They appear to have well established channels of distribution which provide them with good access to their markets.